DNV·GL

REVIEW OF DATA QUALITY AND APPROACH OF THE AGENCY ANNUAL REPORT ON SAFETY

# Assessment of Existing National Occurrence Reporting Regimes and Systems

## European Railway Agency

**Report No.:** Task 1, Rev. 2
**Document No.:** 1LDI90Z-12
**Date:** 2015-12-09

| | | |
|---|---|---|
| Project name: | Review of Data Quality and Approach of the Agency Annual Report on Safety | Det Norske Veritas Limited<br>Operational Risk |
| Report title: | Assessment of Existing National Occurrence Reporting Regimes and Systems | Palace House<br>3 Cathedral Street |
| Customer: | European Railway Agency, 160 Boulevard Harpignies<br>59300 VALENCIENNES CEDEX<br>France | SE19DE London<br>United Kingdom<br>Tel: +44 (0)20 7357 6080 |
| Customer contact: | Vojtech Eksler | |
| Date of issue: | 2015-12-09 | |
| Project No.: | PP120964 | |
| Organisation unit: | Operational Risk | |
| Report No.: | Task 1, Rev. 2 | |
| Document No.: | 1LDI90Z-12 | |

Applicable contract(s) governing the provision of this Report: ERA 2014 09 SC

Objective: To collect information from the relevant national authorities on the existing occurrence reporting regimes in the Member States.

| Prepared by: | Verified by: | Approved by: |
|---|---|---|
| Jonathan Ellis<br>Principal Consultant (Rail) | Dr. Edward Smith<br>Senior Principal Consultant | Dr. Edward Smith<br>Senior Principal Consultant |

Copyright © DNV GL 2015. All rights reserved. Unless otherwise agreed in writing: (i) This publication or parts thereof may not be copied, reproduced or transmitted in any form, or by any means, whether digitally or otherwise; (ii) The content of this publication shall be kept confidential by the customer; (iii) No third party may rely on its contents; and (iv) DNV GL undertakes no duty of care toward any third party. Reference to part of this publication which may lead to misinterpretation is prohibited. DNV GL and the Horizon Graphic are trademarks of DNV GL AS.

DNV GL Distribution:

☐ Unrestricted distribution (internal and external)
☐ Unrestricted distribution within DNV GL Group
☒ Unrestricted distribution within DNV GL contracting party
☐ No distribution (confidential)

Keywords:
Occurrence
Reporting
Accident Incident Database

| Rev. No. | Date | Reason for Issue | Prepared by | Verified by | Approved by |
|---|---|---|---|---|---|
| 1 | 2015-11-10 | Task 1 and Task 2 reports separated and client comments on Task 1 implemented | Dr. Jonathan Ellis | Dr. Edward Smith | Dr. Edward Smith |
| 2 | 2015-12-09 | Agency disclaimer added | Dr. Jonathan Ellis | Dr. Edward Smith | Dr. Edward Smith |

# Table of contents


1 EXECUTIVE SUMMARY ..... 1

2 LIST OF ACRONYMS ..... 2

3 INTRODUCTION ..... 3

4 TASK 1 - OCCURRENCE REPORTING ..... 4
4.1 General Introduction to Common Occurrence Reporting 4
4.2 Survey Methodology and Results 6
4.3 Occurrence Reporting in Other States and Sectors 14
4.4 Discussion of Results 19
4.5 Approaches to a Common Occurrence Reporting System at a European Level 28
4.6 Conclusion 32

APPENDIX 1 THE SURVEY OF NATIONAL SAFETY AUTHORITIES. ..... 33

APPENDIX 2 THE SURVEY OF THE INFRASTRUCTURE MANGERS ..... 42

APPENDIX 3 SURVEY OF THE RAILWAY UNDERTAKINGS ..... 52

APPENDIX 4 THE OUTPUT OF THE SURVEY OF NATIONAL SAFETY AUTHORITIES ..... 63



***Standard Agency disclaimer**: "The information and views set out in this report are those of the author(s) and do not necessarily reflect the official opinion of the Agency. The Agency does not guarantee the accuracy of the data included in this study. Neither the Agency nor any person acting on The Agency's behalf may be held responsible for the use which may be made of the information contained therein."*

# 1 EXECUTIVE SUMMARY

This report addresses Task 1 of the project Review of Data Quality and Approach of the Agency Annual Report on Safety. This comprised gathering information on the existing occurrence reporting regimes utilised in the Member States. The primary mechanism for this was a survey of the National Safety Authorities. This survey similarly covered the reporting regime for suicides on railway premises, although this is reported separately in the Task 2 Report "Assessment of the Impact of Rail Suicides on EU Railways". Further surveys of the Infrastructure Managers and Railway Undertakings were undertaken primarily with the purpose of providing supporting information to Task 2 and Task 3 "Impact Assessment on the Proposal for a Common Occurrence Reporting System".

The objectives of the part of the study addressing a Common Occurrence Reporting system were:

- Is it feasible to establish a European-wide database and what would be the benefits of an EU-wide occurrence reporting regime and what would be the optimal scope and arrangements for such reporting?
- What would be a most sensitive common taxonomy for occurrence?

The output is that it is clearly feasible to establish a common occurrence reporting system. All Member States operate some form of occurrence reporting albeit with a wide variety of approaches. As such agreeing the detail of what should be reported using such a system is quite feasible. Selecting the most frequently reported occurrences captured by the existing regimes would allow this to be done at as low a cost as possible in the immediate term. In the longer term it will be possible to extend the Common Occurrence Reporting system on an incremental basis as it is agreed that further occurrences should be added to it, or alternatively by extending the reporting scope from significant accidents to all accidents resulting in harm or potentially to near miss incidents.

What is needed to support a Common Occurrence Reporting system is explored in tasks 3 and 4, including the benefits that arise from this. Collecting data is not a zero cost or even a low cost undertaking and unless benefit accrues both at the EU level and the National or even railway level, then it can be anticipated that there will be a reluctance to engage in the process. Agreeing what the objective of a Common Occurrence Reporting system should be will in turn influence the taxonomy of the system.

For this reason a hybrid approach to developing a taxonomy is proposed that combines a taxonomy driven by the anticipated benefits with a taxonomy driven by ease of reporting (i.e. occurrences that are already being widely reported).

The consideration of the most appropriate taxonomy is provided in the Task 4 report where it is linked to a clear objective for an EU level Common Occurrence Reporting System.

# 2 LIST OF ACRONYMS

| | |
|---|---|
| **ASRS** | Aviation Safety reporting System |
| **CAA** | Civil Aviation Authority |
| **CER** | Community of European Railways |
| **COR** | Common Occurrence Reporting (regime) |
| **CSI** | Common Safety Indicator |
| **CSM** | Common Safety Method |
| **CST** | Common Safety Target |
| **EIM** | European Rail Infrastructure Managers |
| **ERA** | European Railway Agency (The Agency) |
| **ERAIL** | European Railway Accident Information Links |
| **EU** | European Union |
| **FAA** | Federal Aviation Administration |
| **IM** | Infrastructure Manager |
| **MoP** | Member of Public |
| **MORS** | Mandatory Occurrence Reporting Scheme |
| **NIB** | National Investigation Body |
| **NOR** | National Occurrence reporting (regime) |
| **NSA** | National Safety Authority |
| **RSSB** | Rail Safety and Standards Board |
| **RU** | Railway Undertaking |
| **SPAD** | Signal Passed at Danger |
| **TSI** | Technical Specification for Interoperability |
| **VPC** | Value per Casualty Prevented |

# 3 INTRODUCTION

A comprehensive knowledge of accident and incident statistics can provide information on the underlying safety level in various EU railway systems. In particular it can be used to highlight areas of good practise from which others can learn, it can be used to identify trends in accident precursors potentially alerting a railway or National Safety Authority to a deteriorating situation, and it can be used to inform quantitative risk assessment such as that detailed in the Common Safety Method on Risk Evaluation and Assessment (Regulation (EU) No. 402/2013). Indeed, without knowledge of the failure rate, or frequency of an accident, a quantitative risk assessment is limited in its application.

Some Member States already operate comprehensive occurrence reporting systems, but at an overall EU level only the most significant accidents and incidents are required to be reported. This then limits the ability of the existing EU occurrence reporting regime to support analysis of underlying safety trends, identification of best practise or quantitative risk assessment. This has special significance for those rare but high consequence accidents (multi-fatality) which a single Member State has a low chance of experiencing and for which collation of data at an EU level is necessary to provide a picture of the underlying frequency of the event. There is then potential benefit from having a comprehensive set of occurrence data at an EU level.

The purpose of this study is to investigate this further by analysing the national occurrence reporting regimes in all EU Member States (and Norway and Switzerland) to establish:

- Is it feasible to establish a European-wide database and what would be the benefits of an EU-wide occurrence reporting regime and what would be the optimal scope and arrangements for such reporting?
- What would be a most sensitive common taxonomy for occurrence?

Further to this the Agency wishes specifics of suicide reporting to be investigated. Whilst safety occurrences are reported predominantly by Infrastructure Mangers (IMs) and Railway Undertakings (RUs) and investigated by National Safety Authorities (NSAs) and National Investigation Bodies (NIBs) suicides are additionally investigated by the police in many Member States and decisions regarding the cause of death (intentional, accidental or criminal) made by a coroner or similar judicial authority. As such the reporting of suicide on EU railways is a more complex process than for other occurrences. The Agency wishes to understand better this reporting and consider what is the real impact of suicide events on railways in the EU and is there a need for any action at the EU level? Specifically the Agency wishes to understand what the cost impact of suicide is at an EU and national level and, in order to facilitate comparison between differing Member States, understanding what a suitable normaliser for railway suicide might be. This is discussed in the Task 2 report "Assessment of the Impact of Rail suicides on EU Railways".

The project is structured around five separate tasks:

**1. Assessment of existing national occurrence reporting regimes and systems**

**2. Assessment of the impact of rail suicides on EU railways including follow-up recommendations**

**3. Impact assessment on the proposal for a common occurrence reporting system**

**4. Proposal(s) for the common occurrence reporting regimes and systems including taxonomy**

**5. Assistance to the Agency in organizing related workshops for stakeholders**

Four separate reports have been produced covering the tasks 1 to 4 above.

# 4 TASK 1 - OCCURRENCE REPORTING

## 4.1 General Introduction to Common Occurrence Reporting

An occurrence is defined as an accident or incident with the potential to affect safety. This simple definition covers a wide variety of occurrence types on a railway including:

- Accidents with a multi-fatality consequence such as train collision or derailment
- Accidents with a single fatality consequence such as an individual being hit by a train or an electrocution
- Accidents resulting in injury such as slips, trips and falls on platforms or in stations
- Incidents or near misses that could be related to any of the accident types such as Signals Passed at Danger (SPADs)
- Wrong side operational failures in which, for example, a level crossing is left open to road traffic when trains are passing
- Wrong side asset failures such as a broken rail
- A failure to undertake an activity upon which safety depends such as track or structures inspections

Within the EU legislative framework the reporting of serious accidents and some occurrences is mandated through the Railway Safety Directive (Directive 2004/49/EC as amended by Directive 2009/149/EC) and supported by associated guidance from the Agency[1]. This provides the reporting of the most serious accidents and incidents to common definitions and formats across the European Union and is made public by the Agency via the Annual Safety Report and the ERAIL database. This data is used to then inform the Common Safety Indicators and Common Safety Targets (Common Safety Method for Achievement of Safety Targets, Commission decision No. 2009/460/EC) as applied to each Member State, which are used to maintain and if possible improve the safety performance of railways in the EU. The serious accidents additionally link into the work of the National Investigation Bodies (NIB) whose accident investigation reports are also available via ERAIL.

There is then a well-defined reporting at the European level for the most serious accidents. Serious accidents are mercifully extremely rare in the railway sector. Thus, a Member State may go several years without experiencing one. A safety indicator or safety target comprised of serious accidents can then underrepresent the true level of safety risk in years without an accident and over represent the level of safety risk when a single multi-fatality accident occurs. It is also a lagging indicator in that it does not alert to a deteriorating safety situation but records the fact that safety has deteriorated.

For this reason many commentators[2] advocate the use of minor accident, incident and near miss occurrence reporting as a means for measuring underlying safety risk and as a leading indicator of potential accidents. Work, has suggested empirical links between near misses, incidents, minor accidents, serious accidents, often shown as a pyramid (figure 1). These relationships only exist if the same root cause is applicable to both the incident and the accident; for example the number of broken rails not resulting in an accident may be an indicator of derailment risk.

[1] Implementation Guidance for CSIs, Annex 1 Directive 2004/49/EC as Amended by Directive 2009/149/EC – ERA/GUI/09-2013

[2] Safety Performance Monitoring, A Report by DNV GL for European Railway Agency ERA/2010/SAF/S-01, 21st April 2011

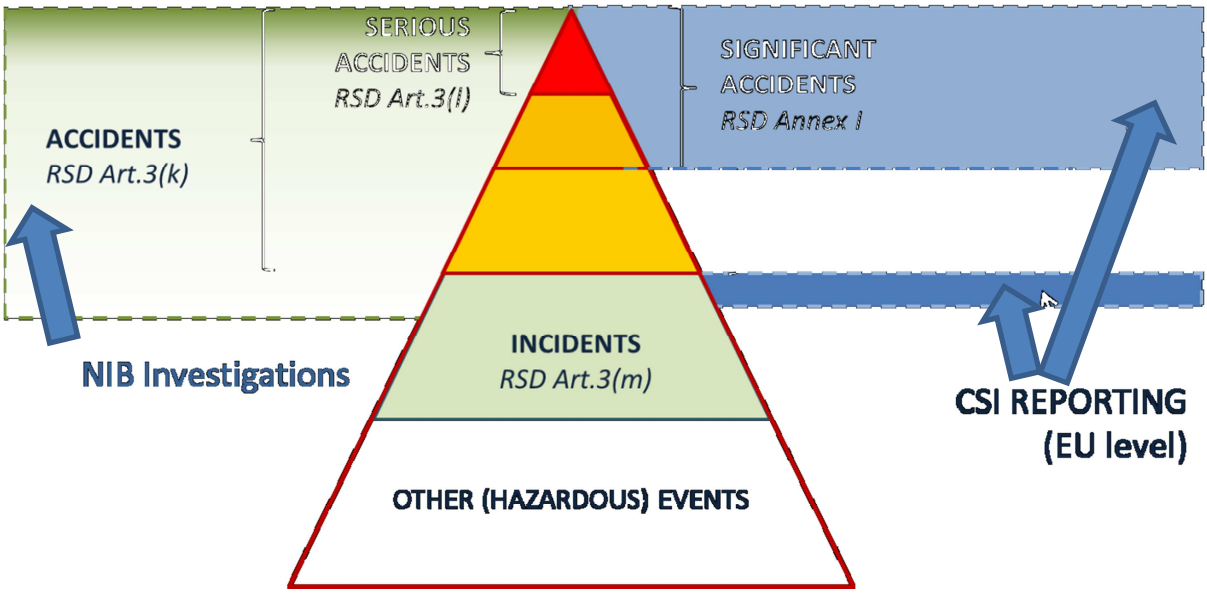



**Figure 1 – The Pyramid of Serious Accidents, Accidents, Incidents and Other Hazardous Events and the Associated Railway Safety Directive (2004/49/EC) Articles and Annexes, after the European Railway Agency Invitation to Tender for this Study**

Databases of such occurrences also represent a valuable source of information for not just managing safety but informing on the efficacy of standards such as the Technical Specification for Interoperability (TSIs). The current EU legislative framework does not require Member States to collect information on all railway accidents. The reporting is often limited to serious accidents (for the purpose of accident investigation), to significant incidents (for the purpose of statistics) and to a selection of other events. Data on incidents are not necessarily collected by RUs/IMs and the NSAs do not always rely on accident data when planning their supervision activities. Moreover, the information about less serious accidents and incidents are not systematically collated at the EU level. This absence may represent an obstacle to efficient learning and early identification of arising and recurring safety issues in the EU railway system. Further to this the use of risk based decision making to support the development of new or modified safety rules or the application of the explicit risk assessment methodology in the Common Safety method for Risk Evaluation and Assessment (EU regulation 402/2013) require accurate accident and incident data in order to be applied.

It is thus of interest to the Agency to understand how occurrences are reported in the Member States and how they are recorded and stored and whether a common approach to occurrence reporting is feasible and desirable at the European level. For the purposes of this study an occurrence is defined as any railway incident which endangers a train, its passengers, or any other person, or which if not corrected would endanger them. This includes level crossing users and trespassers. The geographical scope is the EU Member States plus Norway and Switzerland and the Channel Tunnel.

This report addresses the work undertaken in surveying the Member States to understand their current approach to occurrence reporting at the Member State level including details of the regime for the reporting (who reports to whom and details of the system that the data is stored in) and the taxonomy of the reporting (what information is captured).

## 4.2 Survey Methodology and Results

To capture data on the existing national systems for occurrence reporting a survey of National Safety Authorities (NSAs) was prepared. To encourage completion of the survey it was designed to be simple and quick to complete, inviting respondents to provide links to guidance or regulatory documents which could be followed up later. Responses were invited in any language and a contact was given that allowed the respondents to request assistance from a local DNV GL office as necessary. Briefings were provided to the NSA network, the EIM (European Rail Infrastructure Mangers, representing independent railway infrastructure managers in the EU) and CER (Community of European Railways, representing railway undertakings and some railway infrastructure managers in the EU) advising that the survey was being undertaken and more importantly the benefit that was anticipated from the survey so that respondents had an appreciation of the context and purpose of the work.

The survey was developed on a commercial electronic platform. It was trialled on several NSAs and railway organisations prior to its finalisation. In particular being trialled amongst non-native English speakers to address issues of clarity of expression and understanding.

Following the trials the survey was distributed by the Agency to National Safety Authorities through the NSA network on 15th January with a request that responses be received by 14th February 2015. The target audience for the survey was the 26 National Safety Authorities in the EU (Cyprus and Malta having no mainline rail network have no requirement for an NSA) the Channel Tunnel Safety Authority and the NSAs of Norway and Switzerland as the members of the European Economic Area having a mainline railway. Reminders were sent at intervals during the period that the survey was open and after the survey had nominally closed all of those organisations that had not responded were contacted on further occasions explaining the value that the information requested would have. A presentation on the survey was made at the NSA network meeting (24th March 2015) including an overview of the preliminary results from early responders; again stressing the value that the survey would have. The final response rate for the survey within the 29 NSAs was 100%.

Upon receipt of the completed survey the answers were first checked for internal consistency and any responses that were unclear confirmed with the main contact indicated on the survey response. In many cases the survey requested links to legislation or reporting forms. Where these were provided they were followed up and translated into English. The output of the survey responses was then collated into a standard template developed in Excel which allowed comparison of practise across the EU by country and variable.

A copy of the survey is included in Appendix 1 and Appendix 4 contains printed versions of the electronic response templates for each Member State. Further surveys of Infrastructure Managers and Railways Undertakings were prepared using a similar format to the National Safety Authority survey. These are shown in Appendices 2 and 3 respectively. They were distributed to the Infrastructure Managers through the European Rail Infrastructure Managers (EIM) and the Community of European Railways (CER). A total of 13 Infrastructure Managers and 3 Railway Undertakings responded including those in the priority countries agreed with the Agency. These provided a balance of respondent both geographically across the EU and in the size and extent of their undertakings.

### 4.2.1 Overview of Survey Results

All Member States with the exception of one reported that occurrence reporting was mandatory to some degree within their borders (figure 2). In that Member State occurrence reporting was managed by the infrastructure manager and an agreement existed between the NSA and the infrastructure manager (IM)

that allowed occurrences to be reported onwards from the IM to the NSA. In a clear majority of cases this mandatory reporting stemmed directly from the legal stipulations of the Safety Directive (2004/49/EC). As will be seen later (figure 8) the most common use of occurrence reports by the Member States is to fulfil their legal obligations with respect to the reporting of Common Safety Indicators to the Agency.

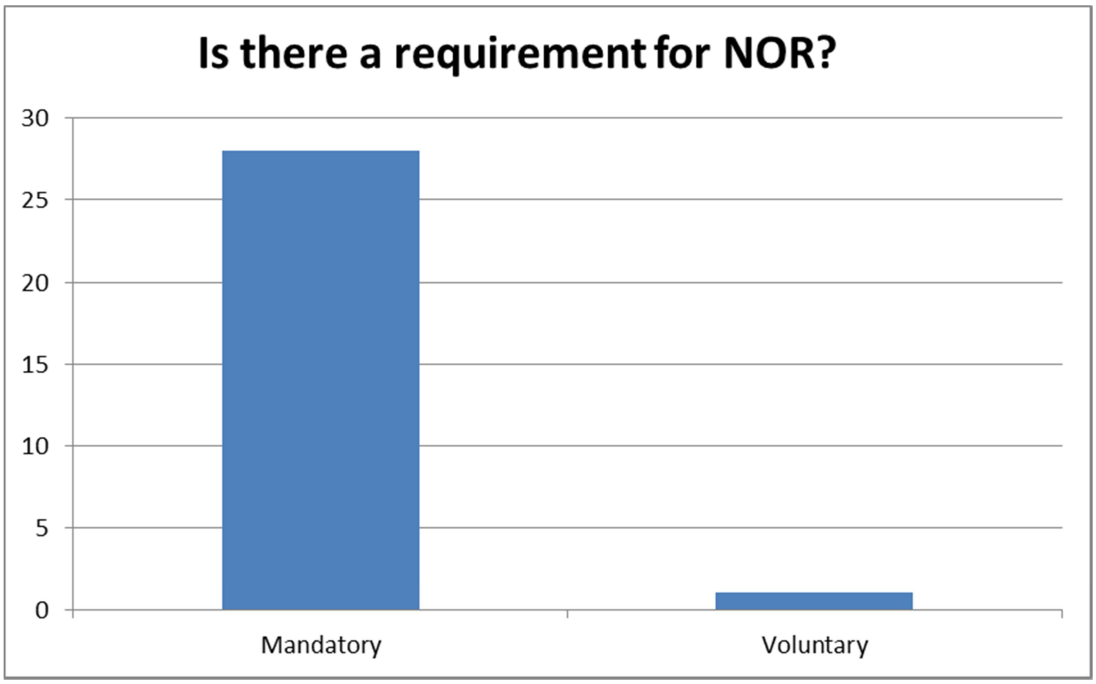



**Figure 2 – Count of the Number of National Safety Authorities Reporting a Mandatory or Voluntary National Occurrence Reporting (NOR) System.**

In most Member States the occurrences are reported to both the NSA and the NIB, but not exclusively (figure 3). One third of Member States report the occurrences to the relevant Ministry and in some to the Emergency Services (Ambulance, Fire Brigade and Police) and in one case (the UK) an external safety board (the Rail Safety and Standards Board). As will be discussed below this is a consequence of the obligations on Member States to report CSI (Common Safety Indicator) data to the Agency and how each Member State has determined this is best done and a consequence of whether the Member State chooses to use the data for any purpose other than mandatory reporting of CSI data. This also has consequences for the time that a report can be made in. If reporting is purely to inform the CSI data then annual reporting, in line with the requirements of the Safety Directive is permissible, but if reports are being conveyed to the emergency services for the purposes of responding to an accident then this report must be immediate.

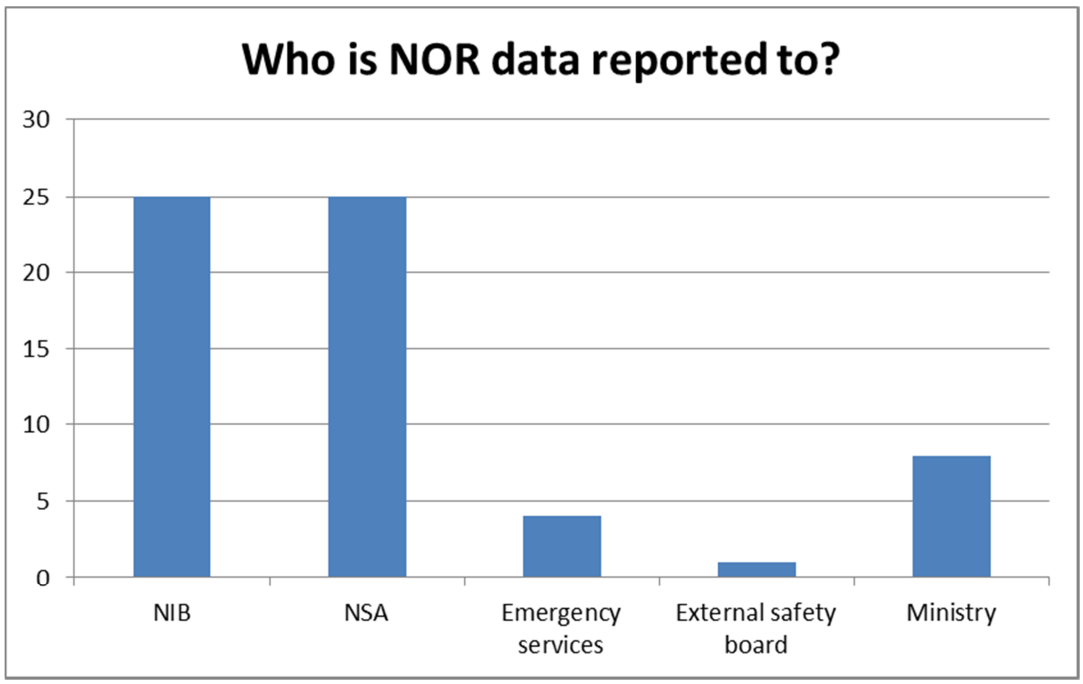



**Figure 3 – A Count of the Number of Organisations to which a National Occurrence Report is made to.**

Whilst occurrence reports are made equally to both the NSA and the NIB in most Member States it is the NSA that is responsible for collating and analysing the data provided (figure 4). Collation of data is also undertaken by the NIB and the Ministry. It can be inferred that this collation is for different purposes in those countries in which more than one entity is responsible for collating information, with the NIB collating it for accident investigation purposes, the NSA for safety monitoring and informing supervisory activities and the Ministry for general reporting purposes.

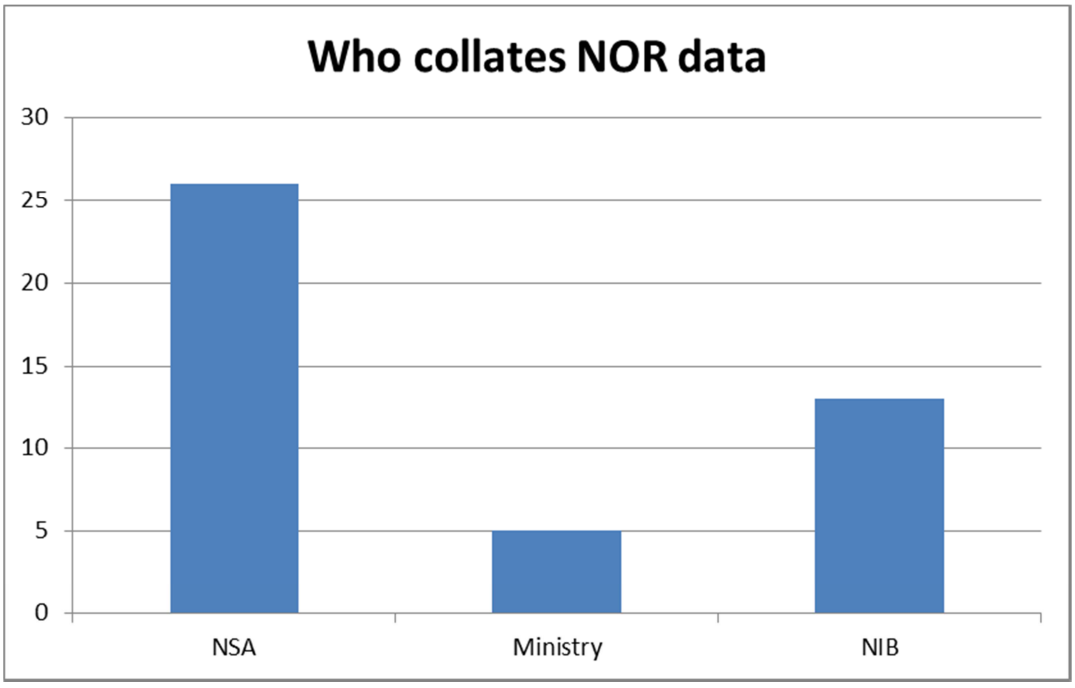



**Figure 4 – A Count of the Organisations Responsible for Collating National Occurrence Reports**

In all Member States the IM can submit occurrence reports, and in only slightly less Member States the Railway Undertaking can also submit occurrence reports (figure 5). In just over one third of Member States members of the public may also submit occurrence reports as can the police in a small number.

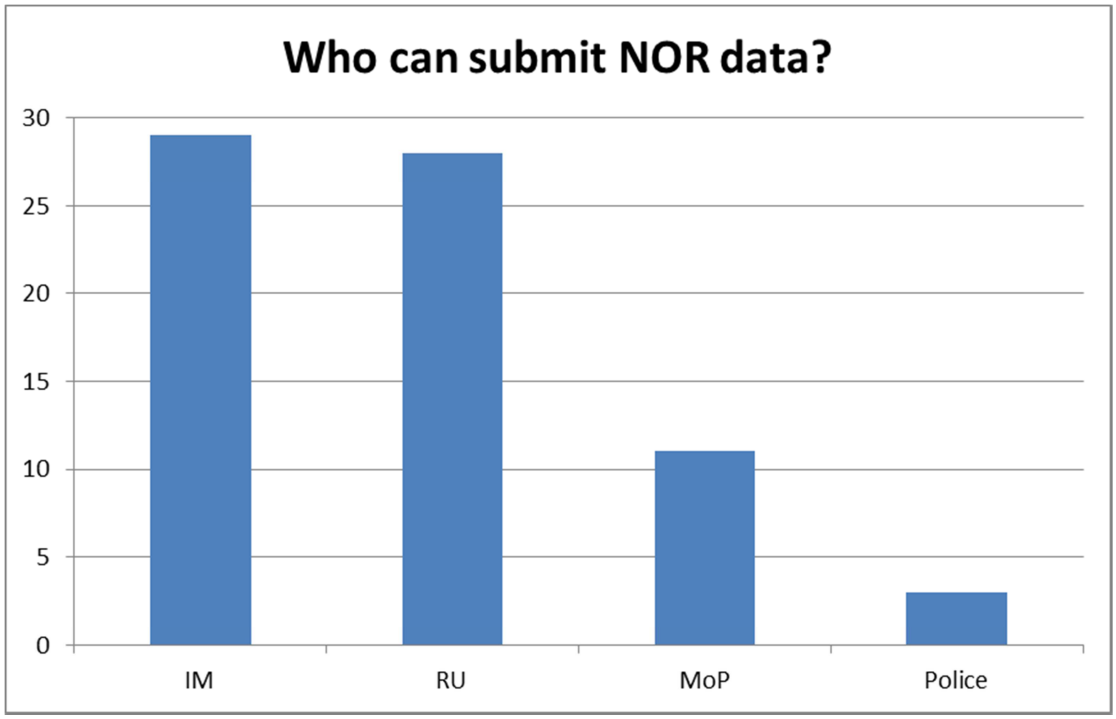



**Figure 5 – A Count of the Organisations Who Can Submit a National Occurrence Report**

It is highly likely that the occurrences reported by these four groups will be different and provide different levels of information in the report. Whilst reporting may be mandatory for the IM and RU it is not for members of the public. It is considered that occurrence reports by members of the public will be followed up by the IM, RU or NSA and that detailed formal occurrence reporting through the mandatory system will be by one or more of these organisations. In effect members of the public provide an alert to the IM, RU or NSA that an occurrence has happened and which they then follow up

Further differences between Member States are visible in the timescales for an occurrence report to be provided (figure 6). Most occurrence reports are required within 3 days or less of the incident, but some Member States require them as soon as possible (particularly if the reporting is linked to the emergency services), or the timing is incident dependent with significant incidents requiring immediate or rapid notification with minor incidents being reported annually. In these situations the occurrence reporting is used as an alert to the NSA or NIB of a serious incident that may require investigation, in addition to it forming a part of CSI reporting requirements. In some cases occurrences forming a part of CSI reporting have only to be reported annually whilst serious occurrences should be reported immediately. In essence the process for occurrence reporting is adapted by the Member State to reflect the purpose of collecting occurrence reports has in that Member State.

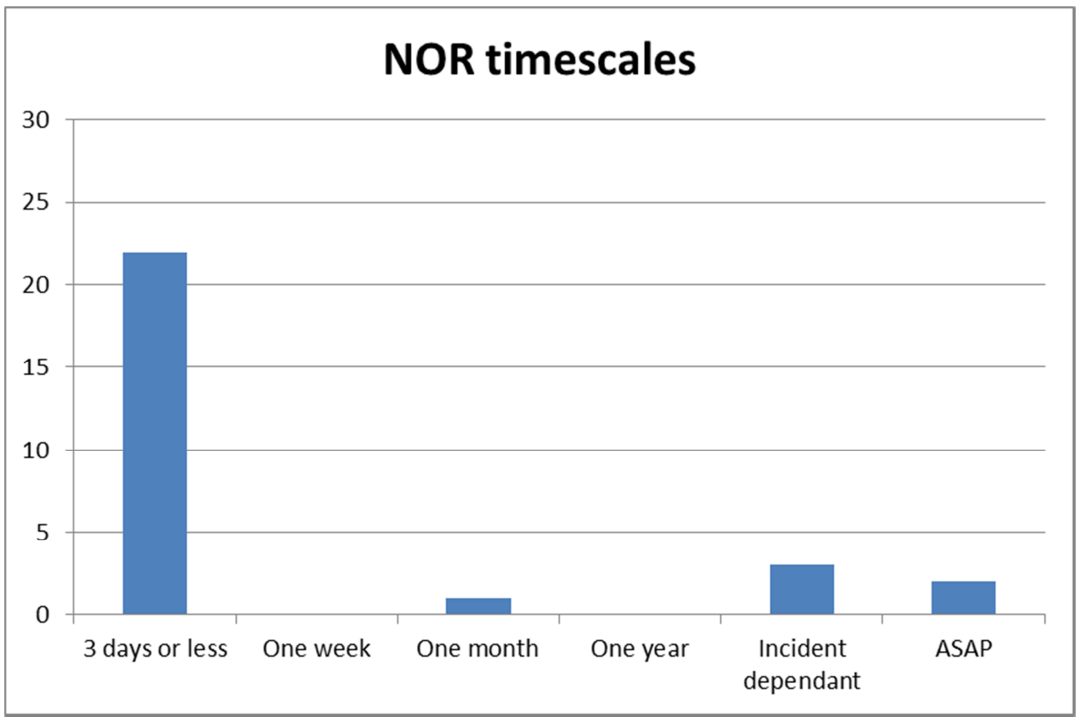



**Figure 6 – A Count of the Responses to the Timescales in which Occurrences should be reported**

Two thirds of Member States use a standard form to capture occurrence data (figure 7). This has obvious benefits for collecting comprehensive data on occurrences that can form a searchable database and inform NSA decisions. One third of member states do not use a standard form for collecting occurrence reports. In a number of Member States the occurrences that must be reported are only those described in the CSIs and the available database of them is solely the annual safety report and a listing of the accident investigations undertaken by the NIB. Whilst recommendations from accident reports can be followed up there is little other visible use of occurrence data being used within these Member States.

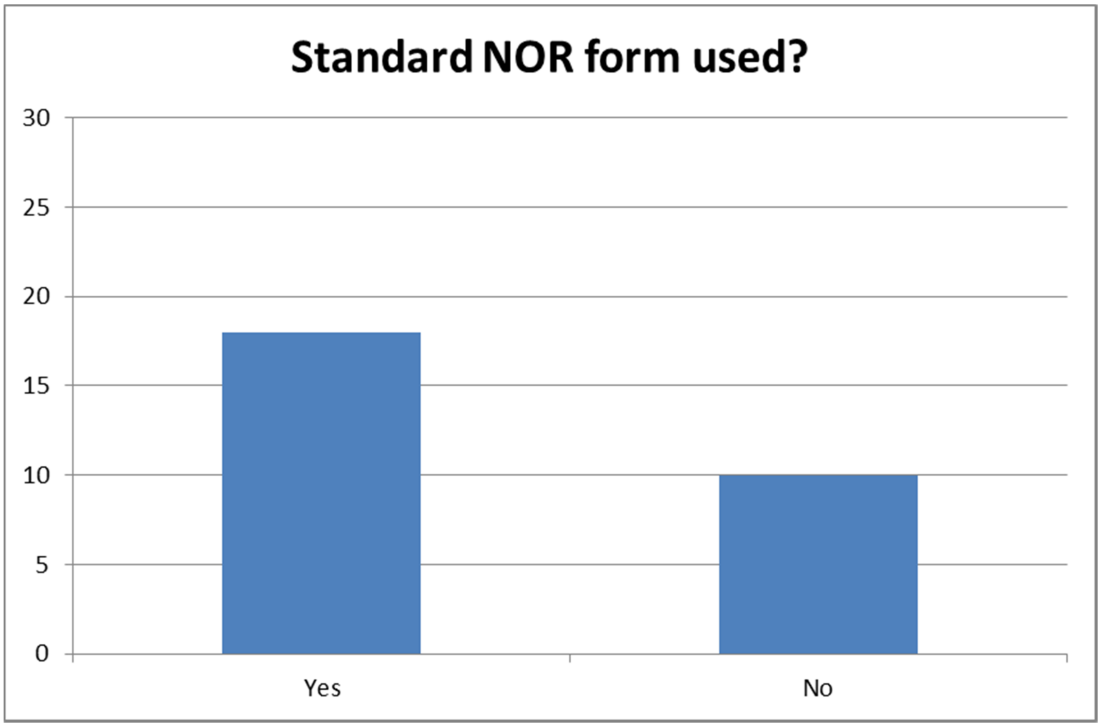



**Figure 7 – A Count of the Responses by the National Safety Authorities Reporting the Use of a Standard Form to Capture and Report Occurrence Data**

For occurrence reporting to be a worthwhile exercise some use has to be made of the information it contains (figure 8). For almost all Member States the occurrence reporting is used to inform the NSA so that it can direct its activities or investigate dangerous occurrences as applicable and to provide the CSI data required by the Agency. Two thirds of Member States use occurrence reports to inform the NIB of serious occurrences and to populate a database. One third of Member States do not maintain a database of occurrence reports. In some cases such as Ireland the infrastructure manager maintains a database of occurrences that the NSA can access, however in others it would appear that the NSA has no access to an occurrence database.

For a database to have value the data within it must be converted to information which is then acted upon in some way. One quarter of the Member States use the information in occurrence reports to populate a model of railway risk within their country which allows either a quantitative assessment of the underlying railway risks or a pictorial (qualitative) representation of the risks as accident black spots. One Member State uses the data to determine if short term safety mitigations are required, one for sharing experience and three for taking a risk based approach to safety supervision by the NSA.

In general whilst most Member States collect occurrence data this is done for the mandatory reporting of CSI data and the collation of it into a database. Relatively little use is being made of the information that this data may contain. Partly this is because of the relative newness of much of the regulatory apparatus associated with railways in the EU, with CSI reporting only being available from 2006. A period of data collection is needed before information can be usefully extracted from it. However, it would appear that this process is starting with the formation of databases within the Member States and some Member States leading on using the data to inform supervisory activities, share experiences, derive safety mitigations and populate risk models.

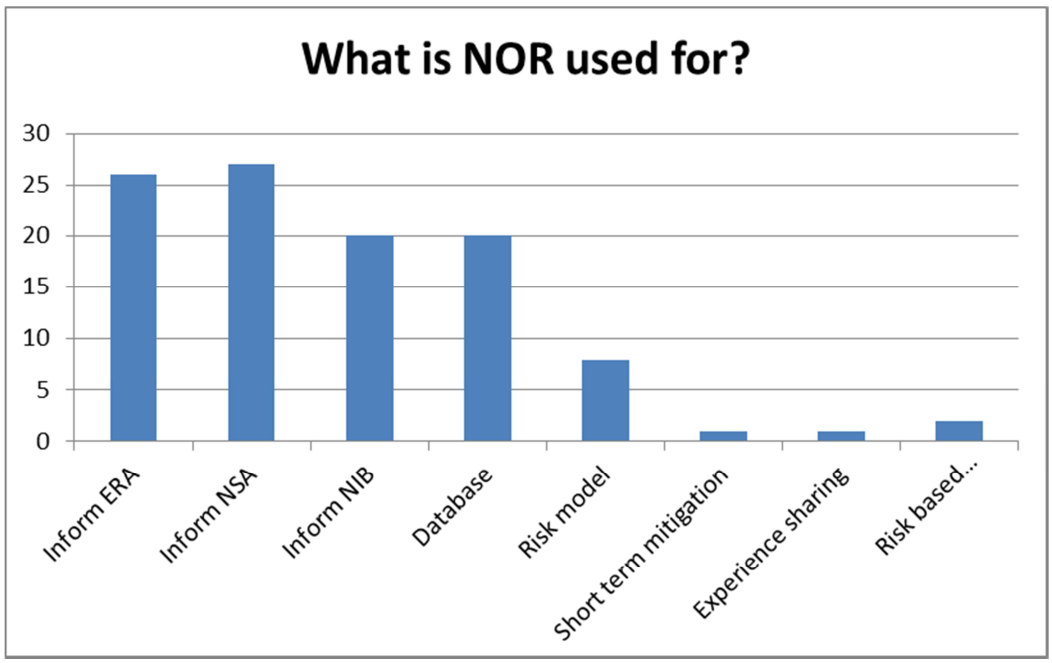



**Figure 8 – A Count of the Responses to the Uses to Which National Occurrence Reporting is put**

### 4.2.2 Legal and Other Provisions for Mandatory/Voluntary Occurrence Reporting at National Level

Table 1 opposite provides a summary of occurrence reporting sat a national level in the Member States and whether this is mandatory. Twenty eight Member States have a mandatory occurrence reporting system, the only exception to this being Portugal. However, beyond this there is a wide diversity of approaches. Only 16 Member States operate a standard form for capturing occurrence data. In terms of populating an EU occurrence database having a standard form with standard definitions is a valuable first step in that it encourages the reporter to structure the information in a consistent and concise manner facilitating transfer into a database structure.

Twenty two Member States report recording occurrence data in some form of database. It should be noted that the structure and capability of these databases varies considerably. Some of these are formally structured databases with taxonomy. Others are of a simpler form, sometimes being a date ordered list of accident investigations undertaken in the Member State. The majority of these databases (three quarters of them) are confidential. A general observation is that the simpler the database the less likely it is to be confidential.

The common feature for all of these is a need to both identify accidents that the NIB should consider investigating and to capture the data needed to report CSIs to the Agency. It is these two requirements that drive the mandatory nature of reporting in most Member States and as such form a kernel of both a standard form and a taxonomy around which any common system could be built.

**Table 1 – Summary of Mandatory/Voluntary Occurrence Reporting at a National Level**

| Member State | Mandatory Occurrence Reporting | Standard Form | National Level Database | Confidential |
|---|---|---|---|---|
| Austria | Y | Y | Y | Y |
| Belgium | Y | N | Y | Y |
| Bulgaria | Y | Y | Y | N |
| CTSA | Y | Y | Y | Y |
| Croatia | Y | N | Y | N |
| Czech republic | Y | N | Y | N |
| Denmark | Y | Y | Y | Y |
| Estonia | Y | N | Y | Y |
| Finland | Y | Y | Y | Y |
| France | Y | N | Y | N/A |
| Germany | Y | Y | Y | Y |
| Greece | Y | N | N | N/A |
| Hungary | Y | Y | N | Y |
| Ireland | Y | N | N | N/A |
| Italy | Y | N | Y | Y |
| Latvia | Y | Y | Y | Y |
| Lithuania | Y | Y | Y | N |
| Luxembourg | Y | N | N | N/A |
| Netherlands | Y | Y | Y | Y |
| Norway | Y | Y | Y | Y |
| Poland | Y | Y | Y | Y |
| Portugal | N | Y | N | N/A |
| Romania | Y | Y | Y | N/A |
| Slovakia | Y | N | N | N |
| Slovenia | Y | N | Y | Y |

| Member State | Mandatory Occurrence Reporting | Standard Form | National Level Database | Confidential |
|---|---|---|---|---|
| Spain | Y | N | N | N/A |
| Sweden | Y | N | Y | Y |
| Switzerland | Y | Y | Y | Y |
| UK | Y | Y | Y | Y |

N/A – Information Not available

## 4.3 Occurrence Reporting in Other States and Sectors

A majority of Member States operate reporting systems for occupational safety, separate of railway safety, which are applicable in a majority of occupational settings. These, most usually legally mandated, permit the Member State through some form of central safety agency to be alerted to serious workplace accidents and monitor the rate of incidence of injury both within the Member State and specifically within certain occupations such as construction. Few of these extend from accidents and injuries into incidents. Some examples where this has happened are given below.

### 4.3.1 Mandatory Accident and Incident reporting on American Railroads

Under the Code of Federal Regulations Part 225 (dated June 16 2015) Railroad Accidents/Incidents: Reports Classification and Investigations it is mandatory for American Railroads to report to the Federal Railroad Administration incidents around three basic categories:

- Deaths or Injuries
    - Death of a rail, passenger or a railroad employee
    - Death of an employee of a contractor performing work for and on the railroad
    - Death or injury of five or more persons
- Train accidents and incidents
    - Any accident resulting in serious injury to two or more train crew members or passengers requiring their admission to hospital
    - A train accident resulting in the evacuation of the train
    - A fatality resulting from an accident or incident at a highway grade crossing (level crossing) when death occurs within 24 hours of the accident/incident
    - A train accident resulting in damage (based upon a preliminary estimate) of $150,000 or more to property or the railroad
    - A train accident resulting in damage of $25,000 or more to a passenger train
- Train Accidents on or fouling passenger service main lines
    - Any collision or derailment on a mainline that is used for scheduled passenger service
    - Any accident or incident that fouls a mainline used for passenger service

These should all be reported immediately by telephone.

Further monthly reports must be made on a standard form of other accidents/incidents at highway grade (level) crossings, accidents or incidents involving rail equipment and result in damage to rail equipment, and occupational accidents, injuries and illnesses to railroad employees and contractors. These are then collated into safety data by the FRA and made available on their website[3]. The FRA uses this information to support accident investigations and to continuously monitor the occurrence of train accidents and incidents and to confirm compliance to safety laws and regulations.

### 4.3.2 Mandatory and Voluntary Occurrence Reporting on Australian Railways

Under the Rail Safety National Law (RSNL), and Transport Safety Investigation Act 2003 it is mandatory to report serious accidents and incidents to the Australian Transport Safety Board who will inform the Office of the National Rail Safety Regulator. These are used to determine if formal safety or accident investigations are needed in the immediate term. Detailed definitions of what should and what should not be reported are available. In addition the regulators and operators use this data to assist with their safety analyses and programmes and store accident and incident reports in a database that is available for researchers and rail safety professionals interested in understanding and mitigating risk. It can be used for international comparative research, while informing the public about emerging issues in rail safety. The present database contains frequency counts of the following safety-critical event types:

- Derailment
- Collision
- Level Crossing Occurrence
- Signal Passed at Danger (SPAD)
- Loading Irregularity
- Track and Civil Infrastructure Irregularity

In addition to this a voluntary reporting system REPCON, Rail Voluntary and Confidential Reporting Scheme, exists. Anyone may submit a REPCON report using the form on the ATSB website[4]. The scheme is confidential in terms of the identity of the reporter and any other individual named within it. On receipt the report is first anonymized in that any identifying details are removed before the report is forwarded to the appropriate body or group for action. Certain categories of report are however not treated as confidential. These are:

- matters relating to a serious and imminent threat to a person's health or life
- terrorist acts
- industrial relations matters
- conduct that may constitute a serious crime.

The purpose of REPCON as opposed to the mandatory reporting above is to identify specific instances in which mistakes may be being made and by having an anonymized reporting system this addresses issues of individuals perhaps being reluctant to report their peers or themselves due to a fear of possible consequences.

[3] http://safetydata.fra.dot.gov/officeofsafety/default.aspx
[4] http://www.atsb.gov.au/voluntary/repcon_rail.aspx

### 4.3.3 UK Offshore Incident Reporting

The Health and Safety Executive in the United Kingdom maintains a hydrocarbon releases database (HCR) in respect of the UK Offshore oil and gas sector. This is legally mandated under the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013. This utilises a standard form that the operator of the oil/gas facility must complete detailing specific information on the hydrocarbon release, often through the use of tick boxes. The database is not publically available but can be made available to parties with a specific interest /legitimate interest for research purposes and is used by the Health and Safety Executive to identify trends such as leak frequencies and ignitions to the industry.

Where it perhaps has limitations is in being confined to a specific set of questions, although a box for additional comments is available. Confining the form to specific questions reduces the cost of supplying information and processing it, but does mean that it is difficult to go back through the database to address a question that was not considered relevant on the form used at the time (e.g. analysing new or emerging risks perhaps as a result of a change of practise or technology).

### 4.3.4 Aviation Safety Reporting System

This is a voluntary and confidential reporting system established in North America for recording near miss events. It is maintained by NASA as an organisation outside of the investigatory and regulatory structure of the airline industry; this was intentional in that voluntary reporting would not be encouraged if an individual considered they would leave themselves open to prosecution or criticism. Indeed a central principle of the reporting system is that it should be confidential and anonymous for those reporting a near miss. This was strengthened by a commitment from the regulator (the Federal Aviation Administration, FAA) that it will not seek and NASA will not release any information that might identify an individual and by a commitment that the FAA will not use reports submitted as a basis for enforcement action unless they describe a criminal offence.

From the outset the aviation sector was consulted on the structure of the programme and in its ongoing oversight in what is described as a cooperative approach. A standard form is used to submit data. To encourage reporting the form is designed to be easy to complete and submit. To aid the compilation of a database from the data in the form there is a structured vocabulary and as series of fixed fields. This is then followed by a free text area in which the reporter can describe the near miss in their own words. This allows both objective data and subjective data to be captured on the same one page form.

Upon receipt of the form the submitter receives an acknowledgement. The form is then reviewed by an attorney for criminal acts and for actual accidents. If either of these situations is described then the form is forwarded to the appropriate authorities. If not an analyst reviews the forms and can seek further information by a "call back" of the reporter. The information on the form is then entered into the database.

The reporter receives feedback in that their report is acknowledged, the analyst is encouraged to provide a short note to the acknowledgement, together with two blank reporting forms to replace the one submitted, a letter of thanks and a copy of the ASRS monthly safety publication. The reporter thus receives immediate and personal thanks, official thanks, a means of further reporting and in the monthly safety publication an indication of the good that is done from reporting.

In its first 19 years[5,6] 297,000 reports were received and 4,100 search requests of the database made. The output of the system is described as being to alert the aviation community to the presence of

[5] The Development of the NASA Aviation Safety Reporting System, W D Reynard, C E Billings, E S Cheaney, and R Hardy, NASA ASRS (publication 34), 1986

[6] The Acquisition and Use of Incident Data, Investigating Incidents Before They Happen, W R Reynard, NASA ASRS (publication 51)

alleged hazards and, when an incident has occurred, to allow similar incidents to be identified in the historic record such that an understanding of the errors potentially lying behind the accident can be found. For example reports of distraction leading to an incident are recorded. When an accident similar to the recorded incidents happens then the possibility that the accident is caused by distraction can be identified and pursued.

### 4.3.5 Mandatory Occurrence Reporting System in Aviation

This is a mandatory reporting scheme within the UK aviation industry in response to EU level legislation specifically European Commission Regulation 691/2010 and EU Directive 2003/42/EC. It mandates occurrence reporting on those operating, commanding, manufacturing, maintaining or repairing aircraft. However, anyone else may make a voluntary report. The competent authority for the purposes of reporting in the UK is the Civil Aviation Authority, which is also the main safety regulator for aviation in the UK. Regulation 691/2010 espouses a just culture in relation to reporting:

> *'Just culture' means a culture in which front line operators or others are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts are not tolerated;*

This is taken further by the CAA in its guidance[7]. It states that the identity of the reporter will remain confidential unless the CAA is required to disclose their identity by law or the reporter authorises disclosure. It further states that it expects employers to act responsibly and *"ensure that every effort should be made to avoid action that may inhibit reporting"* and that it expects employers *"to refrain from disciplinary or punitive action which might inhibit their staff from duly reporting incidents of which they may have knowledge".*

The reports themselves are made on a standard form 1 page in length and different variants exist for Air Traffic Controllers, Air Traffic Engineers and generally for other incidents. Many of the fields require simple answers but here is then a section for a narrative description of the incident allowing a reporter to express what happened in their words and to focus attention on those aspects they consider significant.

On receipt of a report the CAA evaluates each one received deciding if a formal investigation is needed, to determine if checks of the industry are needed and to assess and analyse the information to detect any wider pattern or emerging safety issue which an individual reporter would not be able to spot. The reports are then stored by the Safety Data department of the CAA and made available on request for those wishing to do research for the purpose of furthering flight safety.

### 4.3.6 Discussion of Occurrence Reporting in Other Sectors

Whilst this study has not undertaken a comprehensive survey of occurrence reporting in other sectors some findings can be derived from the analysis undertaken.

**Objective of Reporting** – the occurrence reporting in other established systems is associated with an objective. From this the nature and structure of the reporting regime are derived. Where the objective is specific such as the Hydrocarbon Releases Database (objective to identify trends in leak frequencies) then reporting can be through tightly defined reporting forms often involving tick boxes. Where the objective is to provide a searchable database of occurrences whose significance may not be evident at the time of the occurrence then extensive use of free text is desirable such as in the MORS and ASRS databases.

This structure can be expected to have a substantial impact on the cost of running the reporting system. In systems permitting the use of free text then analysts are employed to query this prior to its being

[7] The Mandatory Occurrence reporting Scheme, CAP 382, Civil Aviation Authority, 18 March 2011

entered into the database. This form of data validation is important in removing errors and providing common interpretation of events and in particular adjectives such as significant. Without this then a system relying on free text data would require data validation every time a search was undertaken.

Free text fields, though, do permit a much richer source of information to be inputted into the database and information that may be deemed not relevant or trivial at the time of the occurrence may also be captured. This would be an important component of any occurrence reporting system for which an ability to "research" previous incidents is a consideration.

**Ease of Reporting** – the easier it is to submit a report the more comprehensive the database will be. This is a key feature of voluntary reporting systems such as AVRS and systems which permit Members of the Public (MoP) to report. Difficult or confusing reporting forms will discourage reporting even in a mandatory system. Indeed non-reporting of near miss events is a widely reported phenomenon[8] even in mandatory reporting systems. There are various well established reasons for non-reporting which include:

- Lack of awareness of the importance of reporting. Occurrence reporting systems with wide definitions of what constitutes an occurrence need to be supported with wide-spread awareness building.
- Fear of reprisals. If an individual is punished in some way (which can be a formal sanction to merely being made to feel foolish particularly in the eyes of their peers) then it acts as a significant disincentive to report. Occurrence reporting systems such as ASRS and the EU Aviation reporting system both address the issue of formal sanction by guaranteeing freedom from prosecution of the individual unless a crime or serious accident has occurred. The ASRS goes further and attempts to not only reduce or eliminate a fear of reprisals but to address peer issues by providing positive thanks and feedback on the benefits of reporting.
- Difficulties in reporting. If the physical process of reporting is time consuming or complex then it acts as a disincentive to report. Most occurrence reporting systems utilise a standard form both to aid reporting and to capture information in a consistent manner; this includes the use of narrative text. This often belies the emerging nature of some occurrences which evolve over time and require ongoing investigation. For example the consequences of an occurrence resulting in serious injury may not be known fully for some time as an individual's medical treatment is ongoing, or root causes of an accident may require investigation. For this reason occurrence reporting requires an investment in the ongoing management of the report itself and completing an occurrence report cannot be seen as a one off event. Indeed several mandatory occurrence databases require an occurrence to be reported within specific times such as 72 hours. In a serious accident an accident investigation may take up to a year to complete and as such the occurrence report will need to be updated over the course of the year. Occurrence reporting should be seen as an active task requiring ongoing management by the reporter and not seen as a single isolated task.

**Data Validation** – The use of an analyst is needed to validate the data and follow up with the reporter concerning any missing or ambiguous information. For a database to have value it should be consistent and complete. Many organisations involved in occurrence reporting maintain significant teams of individuals to do this.

In conclusion good occurrence systems are characterised by:

Having a clear purpose or objective

[8] For example Incident Reporting or Storytelling? Competing Schemes in a Safety-Critical and Hazardous Work Setting, J M Sanne, Safety Science 46 (2008) pp1205-1222

Being easy to use both for the reporter and the interrogator

Being actively managed so they are informative, validated and up to date.

## 4.4 Discussion of Results

### 4.4.1 Generalised Flow of Information in Occurrence Reporting

In general the flow of information from the occurrence to the occurrence reporting system is:

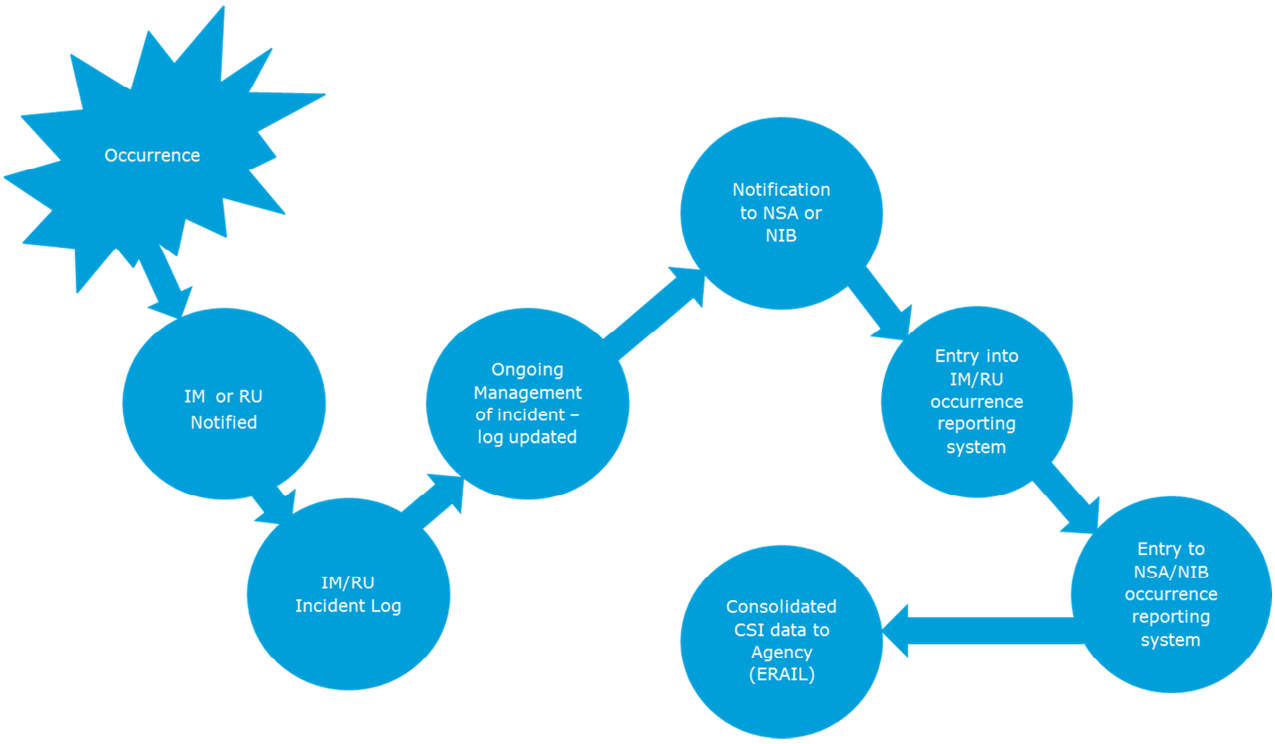



**Figure 9 – A Generalised Flow of Information from Occurrence to National and EU Level Occurrence Reporting System**

As the occurrence is reported along this chain, the objective of the occurrence reporting system changes. Initially the objective is to capture the occurrence and determine what action is needed from full scale emergency response to a serious accident, to corrective operational action in the case of irregular working to a maintenance intervention in the case of an asset failure. It can be anticipated that the IM/RU occurrence reporting system will be different for difference classes of occurrence from accidents and incidents to operational errors to asset failures.

The NSA/NIB occurrence reporting system will then comprise the sub set of events captured at the IM/RU occurrence system level that are reportable to them. As before, these are largely occurrences that fall within the scope of the CSIs or are of sufficient seriousness that the NIB would consider an investigation. Events in this category would then form a part of the annual safety report that the Member State would make to the Agency.

### 4.4.2 Different Levels of Maturity in Member States Occurrence Reporting Systems

Section 4.1.3 provided an overview of the results of the survey. Appendix 2 provides further detail of each Member States' occurrence reporting system. In considering these it becomes evident that considerable variation exists in the maturity of approach taken within differing Member States. Identified maturity levels are:

1. A comprehensive occurrence reporting system is in place at Member State level

2. Serious or significant occurrences are reported at Member State level often allied to the needs of the NIB

3. Only occurrences falling within the scope of the Railway Safety Directive (2004/49/EC as amended by 2009/149/EC) are reported at Member State level. The taxonomy of the database is allied to the NIB investigations and in some cases is simply a list in date order of the NIB investigations

4. No or little occurrence reporting exists at Member State level. The Member State utilises an occurrence reporting system maintained by the sector

This variation exists partly as a result of the different objectives each Member State has regarding occurrence reporting and the different uses that it puts the data to. A clear majority of the systems are relatively recent and are associated with the European regulatory requirements regarding the establishment of an NIB, the need to notify it of serious or significant accidents, and the reporting requirements for the Common Safety Indicators to the Agency. These are mandatory requirements on the sector to report this data. As the introduction of these regulatory requirements is relatively recent the establishment of databases and occurrence reporting systems is similarly recent. Some Member States are in the process of updating their systems as they collect more data and perhaps understanding better what sort of data it is that they are receiving. At the level of the NSA occurrence reporting is in its infancy and whilst the occurrences being reported are common the manner of reporting and recording these is not.

Whilst most occurrence reporting systems specify the occurrences to be reported in terms of either those mandated in the CSIs, or in terms of the actual or potential safety consequences of the occurrence. However, some Member States utilise the reporting system for additional purposes such as the notification of events that may attract media attention, but not necessarily be a reportable occurrence in its own right. Whilst this is still a risk based or consequence approach to defining the occurrences to be reported the actual risk or consequence is a reputational rather than safety one.

### 4.4.3 The Purpose and Use of the Collected Occurrence Data

The structure of any occurrence reporting system is governed by its objectives which in turn will inform the expected benefits for the impact assessment. Identified benefits that can be obtained from a common occurrence reporting system are:

i. To supply data to the Agency in support of the CSI requirements.

ii. To alert the NSA and NIB to urgent situations or serious accidents. Similarly some Member States link their occurrence reporting systems to a notification or alert to the emergency services.

iii. To provide a searchable record of occurrences to facilitate learning or research

iv. To populate a qualitative or quantitative risk model

v. To direct NSA activity through risk based supervision. This might include trend identification or assessment of underlying risk for low frequency (rare) accident scenarios.

These were the subject of a question in the survey of Member State the output of which is given in table 2 opposite. Again a wide spread of possible uses are made of occurrence reporting data, with no one use being common across all member States. Twenty six Member States use the national occurrence reporting system to capture data required for CSI reporting to the Agency, twenty six (but a different twenty six) use the occurrence reports to direct the activities of the NSA, focussing them onto areas of high or emergent risk as identified in occurrence reports. Nineteen Member States use the occurrence reporting to inform the NIB and nineteen also place the occurrence reports into a database. It should be noted that this is a different database to that referred to earlier as it would constitute something more than a date list of accident reports. Finally eight Member States collate the occurrence reports into a risk model.

The risk models again show a wide variation in type. The ones used in Switzerland and UK are quantified models that provide a numerical output of underlying risk in terms of a measure of fatalities and weighted injuries. Those used in Latvia and Lithuania are qualitative models that show the location of accidents and incidents on a map of the railway network, allowing accident hot spots to be identified. The agency has let a separate piece of work that seeks to describe the types of railway risk model used in the EU, which this study will not seek to duplicate.

In general though it is clear that whilst there is some commonality of purpose between the Member States there is no one common purpose. Thus, it can be expected that those occurrence reporting systems which share a common purpose will resemble each other in structure, but no one structure will reflect all the occurrence reporting systems found across the EU. In seeking to establish any common occurrence reporting system in the future across all EU Member States then structuring it around the more commonly used purposes is likely to form the easiest means of achieving this.

One area of interest is whether the various Member States report collecting different types of information such as safety occurrence, operational incident, or asset failure. In considering both the purpose of occurrence reporting and the nature of the information collected in standards forms (see Appendix 2) it is apparent that all Member States are collecting data across all types of occurrence as stipulated in the CSI reporting requirements. This is simply because the majority of Member States (26 out of 29) use the national occurrence reporting system to provide the information that the Agency Requires which (as shown in figure 1) includes accidents, incidents and precursor events such as operational failure (SPADS) and asset failure (broken rails). What differs between the Member States is the depth of the reporting rather than its breadth. Figure 12 shows the number of occurrences collected annually in those Member States providing the data, showing the differences in depth of reporting.

**Table 2 – Summary of the Survey Results Concerning the Use to Which the Occurrence Reports are put**

| Member State | Provide Data Required by Agency | Inform Supervision Activities of NSA | Provide Information for NIB | Collated into a Searchable Database | Collated into a Risk Model | Other |
|---|---|---|---|---|---|---|
| Austria | Yes | Yes | Yes | Yes | No | |
| Belgium | Yes | Yes | Yes | Yes | No | |
| Bulgaria | Yes | Yes | Yes | Yes | No | |
| Croatia | Yes | No | Yes | No | No | |

| Member State | Provide Data Required by Agency | Inform Supervision Activities of NSA | Provide Information for NIB | Collated into a Searchable Database | Collated into a Risk Model | Other |
|---|---|---|---|---|---|---|
| CTSA | Yes | Yes | No | No | No | |
| Czech Republic | Yes | No | Yes | No | No | |
| Denmark | Yes | Yes | No | Yes | No | |
| Estonia | Yes | Yes | No | Yes | Yes | |
| Finland | Yes | Yes | Yes | Yes | Yes | |
| France | Yes | Yes | No | Yes | No | Sharing experience between operators. |
| Germany | No | No | Yes | Yes | No | |
| Greece | Yes | Yes | Yes | Yes | No | |
| Hungary | Yes | Yes | No | Yes | No | |
| Ireland | Yes | Yes | Yes | No | No | |
| Italy | No | Yes | No | Yes | No | Identify mitigating actions following an accident. |
| Latvia | Yes | Yes | Yes | Yes | Yes | |
| Lithuania | Yes | Yes | Yes | Yes | Yes | |
| Luxembourg | Yes | Yes | Yes | No | No | |
| Netherlands | Yes | Yes | No | No | Yes | |
| Norway | Yes | Yes | Yes | Yes | No | |
| Poland | Yes | Yes | No | Yes | Yes | Annual report to Transport Ministry. |
| Portugal | Yes | Yes | Yes | Yes | No | |
| Romania | No | Yes | Yes | Yes | No | |
| Slovakia | Yes | Yes | Yes | No | No | |
| Slovenia | Yes | Yes | Yes | No | No | |
| Spain | Yes | Yes | Yes | No | No | |
| Sweden | Yes | Yes | Yes | No | No | |
| Switzerland | Yes | Yes | No | Yes | Yes | |
| UK | Yes | Yes | No | Yes | Yes | |

### 4.4.4 The Link between Purpose and Taxonomy for a Common Occurrence Reporting Regime

Considering the five identified benefits of a common occurrence reporting system identified earlier. Each of these is discussed further below.

i) Creating a common occurrence reporting system based upon a need to supply data to the Agency to support CSI requirements could be seen as an evolution of the existing reporting arrangements. If the Agency wished to specify further occurrences it could expand the regulatory legislation to include these and the specific information requirements around them. This would be well suited to a reporting form

based around tick boxes or drop down menus with each occurrence being associated with a limited and specific set of reporting requirements which would be easily validated (and indeed it may be possible to automate the system to validate much of it). It would lend itself to not only information on accidents but incidents and asset failures such as broken rails, cracked wheels, wrongside signal failures, SPADs etc.. The taxonomy for this would be based upon simple cause - consequence relationships such as:

| Occurrence | Cause | Consequence |
|---|---|---|
| broken rail | weld defect | speed restriction introduced |
| | | |

ii) A system that alerts the Agency, NSA, NIB or even the emergency services to an accident through a common occurrence reporting is not considered a suitable objective for this system. To be effective this would have to operate in real time and be capable of processing evolving information. The full extent of the situation, its causes and consequences may not be known at the outset of the occurrence being reported and decisions will have to be made on limited information which can be anticipated to be revised several times. This is best handled by an incident log as maintained by an IM or RU and which may then feed a common occurrence reporting system at a later point in time.

iii) An occurrence reporting system that provides a searchable historic record is of considerable potential interest in providing greater understanding of risk through trend analysis and accident causality. The majority of respondents to the survey highlighted that occurrence data was used to inform the NSA. This would potentially include the identification of adverse trends or emerging issues or indeed the monitoring of safety performance during a period of change. The CSM on Risk Evaluation and Assessment provides that the ability to monitor safety during and following a change is a screening factor in whether the change should fall within scope of the CSM. In addition an occurrence reporting system can provide a valuable resource for research as shown by the over 4,000 search requests made to the ASRS in 19 years. Research such as this can be used to support studies into risk but also to identify previous occurrences of a similar accident or occurrence as a part of an accident investigation.

One feature of an occurrence reporting system that is regarded as being particularly useful is the ability to include narrative or free text. This provides an avenue for a reporter to input details of the accident that they might consider relevant but which are not a part of the taxonomy of the database. This might include entries from incident logs or accident reports themselves. This information will be unstructured but is particularly useful for considering new or emerging risks or contributory factors to an accident that were not considered when the database was designed. When a new risk is identified, such as that arising from a novel technology, the free text fields can be interrogated to provide clues as to how this might manifest itself. Or, if the trend in the rate of an existing occurrence changes the free text can be examined for clues as to what might be driving this.

Several tools exist for free text analysis the most common of which is word frequency analysis, of which "Wordle" is a common example (figure 10 below) or bespoke systems such as that developed to analyse the Aviation Safety Reports described earlier (section 4.1.5.4)[9]

[9] Extracting Information from Narratives: An Application to Aviation Safety Reports, C Posse, B Matzke, C Anderson, A Brothers, M Matzke, and T Ferryman

**Figure 10 – An Example of a Wordle Generated from a Section of this Report. The Size of the Text Represents Visually the Frequency of the Word in the Narrative Text**

iv) Seven of the respondents to the survey report that their national occurrence reporting system is used to support a risk model. These were followed up in subsequent contact with the Member State representatives concerned. Most of the risk models are graphical presentations of the railway network in the Member State showing the location of serious accidents and thereby allowing locations of accident black spots to be highlighted (Lithuania, Latvia). This is extended in some work undertaken by the infrastructure manager in Norway (JBV) in which not just accidents but risk assessments or hazard analysis are plotted so that underlying risks can be visually represented on a map of the network. Finally a quantitative risk model can be populated from the occurrence data as is the case in Britain. This uses an analysis of the recorded occurrences to calculate a frequency of that occurrence and the consequence of that occurrence. Risk (defined as the combination of frequency and consequence) can then be calculated on a network wide basis and on a specific route as required.

The benefits that are realisable from this approach relate to the assessment of underlying risk, particularly for rare multi-fatality or catastrophic events. As these do not occur every year then measuring safety as the number of accidents or injuries experienced in a Member State (the approach taken through the current set of CSTs and CSIs) can underestimate the true level of risk in a year with no catastrophic accidents and overstate it in a year with a single event. When combined with Value per Casualty or Value per Fatality Saved figures (Implementation Guidance for CSIs, Annex 1 Directive 2004/49/EC as Amended by Directive 2009/149/EC – ERA/GUI/09-2013) then justifications for investment decisions can be supported.

In terms of database structure an occurrence reporting system with risk modelling as an objective would benefit from a taxonomy based around fault and consequence trees and including precursor events and the identification of contributory factors to any consequences (such as the presence of a body of water next to a derailment site). Like the Hydrocarbon Releases Database, which is geared towards quantitative assessment of risk, a reporting structure based around detailed specific information is required.

v) The final objective considered for an occurrence reporting system in this report is its ability to support a risk based approach to safety supervision by the NSA. Only one NSA reported using occurrence reporting in this way in the survey. A risk based approach to safety supervision is simply prioritising NSA resources against those areas of greatest risk on the railway. Ideally it is proactive, supervising an area

of high risk based upon occurrence (precursor) reporting rather than reactive in which it would be based upon actual accident data.

As should be evident from this discussion the structure and taxonomy of a common occurrence reporting system is governed in part by the objectives that exist for the system.

### 4.4.5 Promoting and Encouraging Reporting

In the discussion on the voluntary reporting regime in the North American aviation sector (section 4.1.5.4) the use of publicity to promote the reporting system and the use of feedback and reward were discussed in the context of encouraging reporting. This is highly important because ultimately an occurrence reporting system is only as good as the data in it. Poor quality or missing data will mis-represent the true state of safety on the railway and if the occurrence reporting system is used to support decision making in any way, can result in sub optimal or poor decisions.

It may be considered that these issues are lessened in a mandatory reporting regime, and indeed they should be, but many studies[10] identify poor or low reporting levels of near misses. Some railway occurrences such as level crossing near misses are highly reliant on members of the public reporting themselves. For this reason even a mandatory system should be promoted and regular feedback provided to users and reporters concerning the benefits of reporting. Reporting should also be easy and time invested in making the reporting form quick and easy to compete. The use of analysts to review all of the information presented to the occurrence reporting system is a feature of several occurrence reporting systems. One advantage of this is the ability of an analyst to contact the reporter for additional information or clarification. People are often more comfortable talking on a telephone to a trained helpline operator than filling in a form.

Reviewing the daily incident log maintained by an IM or RU is another way in which occurrences that have not been reported can be identified and followed up. This is a practise undertaken by several NSAs or IMs as a part of occurrence reporting.

Ultimately the best way to encourage reporting of occurrences is to make the process easy, to promote the occurrence reporting system and the benefits it has and to avoid punishing those who report unless a criminal act has occurred. This is a feature of a number of successful occurrence reporting systems in use in other sectors.

Key success factors for any occurrence reporting system relate to:

- Clear benefits widely articulated
- Promotion of success stories associated with use of the occurrence reporting system
- Ease of making a report
- Positive feedback and thanks to those taking the trouble to report
- Validation and verification of data
- No negative consequences from reporting

### 4.4.6 Future Proofing any Common Occurrence Reporting System

In the previous section the validation and verification of the data contained within the occurrence reporting system was discussed. This is an important aspect of the ongoing management of the system as is reviewing and adapting its taxonomy to address future occurrence types or emerging issues. For

[10] For example Incident Reporting or Storytelling? Competing Schemes in a Safety-Critical and Hazardous Work Setting, J M Sanne, Safety Science 46 (2008) pp1205-1222

example adapting the taxonomy to cater for a new technology such as ERTMS which can be expected to have new failure modes and hence new safety related occurrences.

The implication is that the Common Occurrence Reporting System requires a management and administrative component. Occurrence reporting in other sectors was characterised by a governing or steering committee of users and reporters who could input to or direct these decisions and ideally provide an early indication of a need to change the occurrence reporting system.

### 4.4.7 Interface to IM/RU Systems and Data Collection

Many Member States report in the survey the use of a bespoke reporting form or system to report occurrences to them. However, as illustrated in section 4.1.6 this is highly unlikely to be the primary report on the occurrence. With the exception of occurrences relating to Members of the Public it is most likely that an occurrence will first be identified by a member of railway staff and reported into the railway control where it will be logged. IMs and RUs maintain multiple databases of asset failures, irregular working, incidents, accidents and other occurrences. In many ways this would represent a more comprehensive and richer dataset from which common occurrence reporting data could be drawn at a European level.

In at least three Member States (Ireland, Portugal and Slovakia) it is the IM database that is used exclusively to supply occurrence data. The main infrastructure Manager in Ireland (Iarnród Éirann) is in the process of establishing a single occurrence reporting system that covers asset, operational and member of public occurrences from several disparate systems. It is still mandatory to report serious occurrences to the NSA and NIB but this is more of an alert than a reporting for the purposes of compiling a database. As such the IM database forms a single source of data which can supply several different needs. This reduces incidences of duplication between differing datasets and means that data verification and validation need occur only once.

If a mandatory occurrence reporting system is chosen consideration should be given as to whom to mandate it on. The closer the reporting is to the actual occurrence the better the data integrity can be expected to be as the data passes through fewer processes/databases.

### 4.4.8 Implications for a Common Occurrence Reporting System

The objective of this project is to consider the feasibility of constructing a common occurrence reporting (COR) system for railways at an EU level. Given the fact that much occurrence data is already captured at Member State level and by IM/RUs, and that equivalent high hazard industries such as oil/gas and aviation already operate such systems, then it is clearly feasible to design and implement such a common occurrence reporting system. Indeed the existing ERAIL database can be considered as a first step in a common occurrence reporting system as it annually reports data on a defined set of occurrences at an EU level.

Having determined that it is feasible an impact assessment will consider if it is desirable to implement a COR at the European level. In doing this it must first be considered what the COR should be as this will govern its costs and benefits, the fundamental parts of the impact assessment. Consideration which will affect the possible options for implementation a COR have been considered based around the analysis of existing National Occurrence Reporting Schemes.

### 4.4.9 A Voluntary Scheme

The Agency could define the occurrence requirements, the data that it wishes to associate with each occurrence, the definition of the occurrence and provide an electronic system to accept the data and store it. If the taxonomy is simply defined and the occurrences restricted to the relatively small number

of serious accidents then this could be a simple system in a standard software such as Excel or Access; or it could be an extensive, highly defined system, on a specialist platform.

As a voluntary system only those willing Member States who perceive that the benefits from such a system outweigh the costs involved would participate. Hence in any impact assessment the cost would always be acceptable. However the benefits of such a system would be debateable. For an occurrence reporting system to be of any benefit it would have to contain details of all the relevant occurrences and details of the overall population (for example when considering freight wagon derailments due to axle failure both the number of failures and the overall number of axles in service must be known) or otherwise no decision could be supported from the system. For example in trying to determine if a railway sub system achieves the $10^{-9}$ failures per operating hour specified in the CSM on Risk Evaluation and Assessment (Commission Regulation 402/2013/EU) then data on failure occurrences would be needed from many if not all Member States in order to gain a valid overall failure rate and not just that from one Member State who was prepared to volunteer it. Equally if an NIB were interested in determining if an accident in their Member State had occurred elsewhere i.e. whether there was prior learning available, then having data from only a few countries would not enable a conclusion to be drawn regarding the uniqueness of the event.

For these reasons a voluntary system is not recommended as whilst it is a low cost option it is not very beneficial.

The ASRS is an example of a voluntary system that is effective. However, it is subtly different from the occurrence reporting system envisaged here. The ASRS excludes accidents and focuses on near misses or incidents often associated with human error. Incidents of this nature are often associated with under reporting and fall into the category of any data being of value in terms of illuminating issues around human error. It is likely that a mandatory system would not capture this data either.

### 4.4.10 A Public Scheme

The survey responses contained in Appendix 2 indicate that the majority of occurrence reporting systems used in the EU are not public ones, i.e. access is most usually restricted to the NIB or NSA only. This is in contrast to the ERAIL database which is fully publically available. There are several possible reasons for keeping data in an occurrence reporting system private. If the system records details of individuals that are personal then it will need to comply with relevant data protection issues in each Member State in which it is available. Whilst data protection does not usually extend to the dead i.e. fatal accidents, the sensitivity of others involved in the accident and relatives/friends must also be considered. These considerations limit the type of data that can be contained within a public occurrence reporting system.

The situations in which the National Occurrence Reporting System is publically available in the Member States are those in which the system is relatively limited in scope often being confined to a date order list of the accident reports issued by the NIB. This data is already available on the ERAIL database. If the Agency wish to develop a Common Occurrence Reporting system that extends beyond this then the most direct means of doing so in the short term is to keep the database confidential; providing reports or outputs on its contents either on request to researchers or anonymised meta data in the form of trend analysis and reports.

The alternative, which is to agree a common form of data with all Member States that can be publically available will probably be too time consuming to agree or too limiting in its functionality to provide much benefit.

It is therefore recommended that any common occurrence reporting system developed is a private one in the first instance.

### 4.4.11 Maturity Level of the Common Occurrence Reporting System

The survey results as shown in Appendix 2 exhibit widespread differences of maturity level in terms of Common Occurrence Reporting Systems. Widespread differences exist between the amount of data held by Member States and the date of the earliest record. It is anticipated that a considerable cost would be incurred in terms of the retrospective population of an historic system and as such this would not be recommended. Indeed it may not even be physically possible to identify the occurrences from within the other data held by Member States to populate such a system from a historical perspective.

Moving forward it would be desirable for common definitions and reporting criteria to be established as well as a common taxonomy for the reporting of occurrences. For those Member States not currently collecting a full suite of occurrence data, consideration must be given to the means of collecting, collating and transmitting the data to the Common System. It is likely that in the short term a common system would encompass a limited set of specific data in order that it does not represent a significant burden. There is little to be gained through mandating a complex system with a high level of maturity when the basic infrastructure in the Member States is not in place to collect the occurrence data. A phased or evolutionary approach, starting with a simple COR system and adding maturity as it becomes embedded, and a data collection infrastructure put in place, would appear to be a beneficial means of achieving a high maturity reporting system.

This is then a consideration for the objectives of the Common Occurrence Reporting System.

## 4.5 Approaches to a Common Occurrence Reporting System at a European Level

### 4.5.1 Overview of the Options Considered

In moving to a common occurrence reporting system at the European level there are three broad approaches that can be taken.

**i) Bottom Up** – This would start with a survey of the data collected and the taxonomy utilised by the Member States and identify commonalities between these. On the basis that data collected by many Member States on an occurrence should be of use and, as it is already collected, easy to obtain then this forms the basis for establishing a common system.

Further work would then concentrate on establishing a common terminology for reporting and extending the range of occurrences reported and the volume of information associated with this over time to a more comprehensive system.

Figure 11 below provides an overview of whether a Member State has a database for common occurrence reporting and a standard form on which to capture information. As can be seen 13 Member States currently do not have a standard reporting form. Figure 12 then provides an overview of the number of occurrence reports received per year. Considerable variation exists between the Member States in terms of the number of reports received each year. This difference cannot be explained in terms of the relative size of the railway in the Member State as Poland and Italy with large national rail networks are recording far fewer occurrences than smaller Member States such as Norway and Belgium. It is far likelier that the definition of an occurrence that must be reported is far broader in Norway than it is in Italy. Occurrence reporting could extend into occupational health reporting as well as accident reporting and asset failure. Given that any database design would have to account for the quantity of occurrences to be reported annually then harmonisation of a common definitions of which occurrence types should be reported is an essential step.

| | Database | No Database | IM Database |
|---|---|---|---|
| Standard Form | Austria<br>Bulgaria<br>CTSA<br>Denmark<br>Finland<br>Germany<br>Latvia<br>Lithuania<br>Netherlands<br>Norway<br>Poland<br>Romania<br>Switzerland<br>UK | | Portugal<br>Hungary |
| No Standard Form | Belgium<br>Croatia<br>Czech Republic<br>Estonia<br>France<br>Italy<br>Slovenia<br>Sweden | Greece<br>Luxembourg<br>Spain | Ireland<br>Slovakia |

**Figure 11 – Consolidated Output from the Survey**

This is in many respects a low cost approach based at least initially on what is common practise today. Where it has limitations is that it fails to establish an objective for the occurrence reporting system. Certainly in the early phases of this work it is likely that insufficient occurrences will be reported or in insufficient detail to provide widespread benefit. It would then fail to achieve some of the important requirements identified in the previous section. Namely that there is little incentive to report data as no benefit is received other than legal compliance.

In many respects this is similar to the present situation as regards reporting the CSI data. With no clearly defined objective the reported data do not provide the comprehensive picture of safety or risk that a more comprehensive occurrence reporting system might.

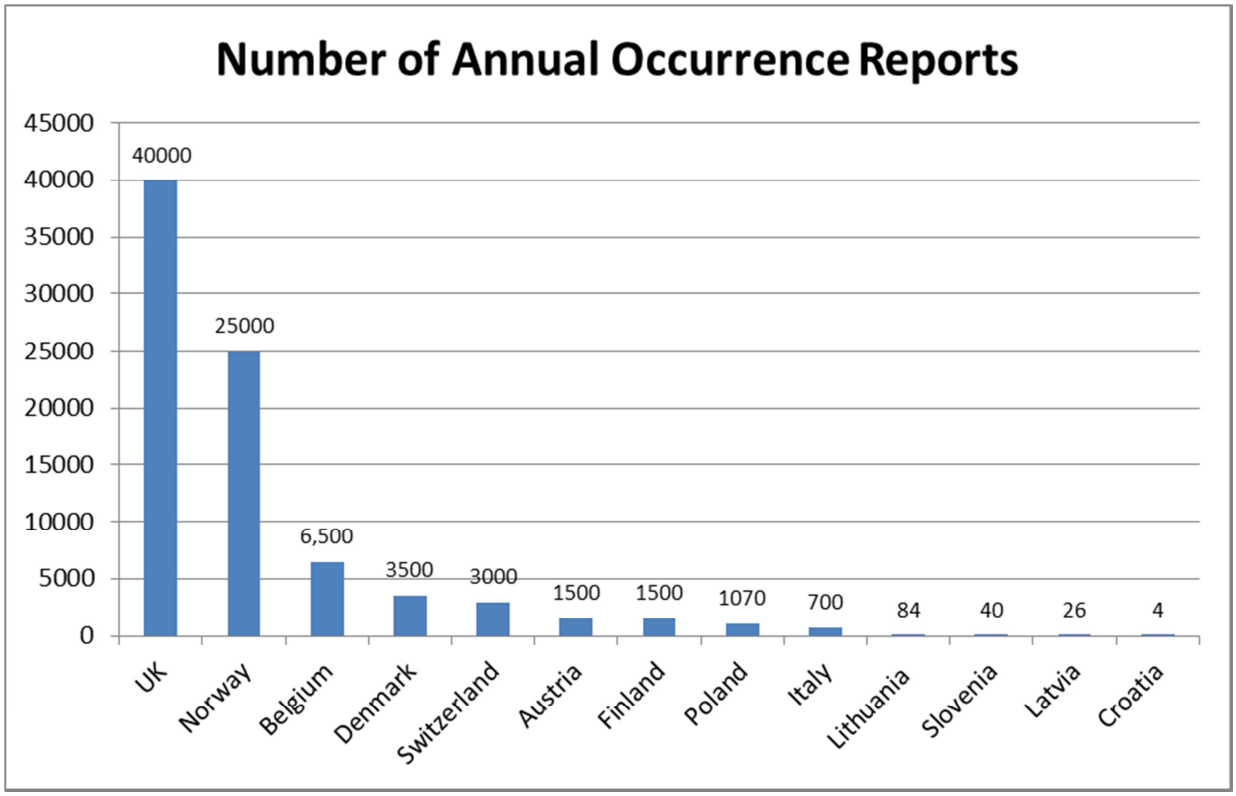



**Figure 12 – The Number of Annual Occurrences Reported in Member States[11]**

**ii) Top Down** – The Agency, working with the sector and NSAs should define what any common occurrence reporting system should deliver; in essence why it is needed. This would then inform the design and taxonomy of the system. Considerations would include whether it should extend to accident, incident, occupational health, asset failure, irregular working or near miss reporting, or all of these. And if so what value there is in so doing.

This would provide a system that is, at least in theory, fully aligned to its benefits case and with a high level of support and buy in from those expected to report occurrence data to it. The disadvantage of this is that it is likely to require data input that is not routinely collected in all Member States and, as such, will require investment in time and money on the part of the users/reporters before any benefit is accrued.

**iii) Hybrid Approach** – This is where both the top down and bottom up approaches are progressed and a gap analysis undertaken between the two. The common occurrence system initially comprises that data which is easy to collect and is already widely reported. Simultaneously the Agency, working with the sector and the NSAs defines the objectives for the common occurrence reporting system. The gap analysis is then identifying what additional data is required for the common occurrence reporting system to achieve these objectives.

These three approaches, together with specific options for implementing a COR, will be explored during Tasks 3 and 4, impact assessment, of this study.

### 4.5.2 Detailed Taxonomy and Format of National Databases

As discussed not all Member States have a database to record national occurrence reporting and even if they do then they exhibit different reporting types and structures. Details of the system taxonomies

[11] UK figure assessed as being half of the volume of reporting contained in the industry administered Safety Management Information System

have either been received from the Member States concerned or can be inferred from the standard reporting form or the regulatory reporting requirements. These are described in the Task 4 report “”Proposal for the Common Occurrence Reporting Regimes and Systems Including Taxonomy”. Table 3 shows the summary of the survey results for the method of receiving occurrence reports (either verbally, in wiring or electronically) and the format of the database.

**Table 3 – Summary Results from the Survey Concerning the Format of National Databases**

| Member State | Verbal Input (Telephone) | Written Input | Electronic input | Electronic Database | Software | Development Planned in Near Future |
|---|---|---|---|---|---|---|
| Austria | Y | | Y | Y | | Y |
| Belgium | | | Y | Y | Filemaker | |
| Bulgaria | Y | Y | | Y | | |
| Croatia | | | Y | NK | | |
| CTSA | | | Y | Y | | |
| Czech Republic | Y | | Y | NK | | |
| Denmark | | | Y | Y | Access | |
| Estonia | Y | Y | Y | Y | | |
| Finland | Y | Y | Y | Y | Q-Pulse | Y |
| France | | | Y | Y | | Y |
| Germany | Y | | Y | Y | | |
| Greece | Y | Y | Y | N | | |
| Hungary | | | Y | Y | | |
| Ireland | Y | Y | Y | N | | |
| Italy | | | Y | Y | Excel | |
| Latvia | Y | Y | Y | Y | Excel | Y |
| Lithuania | Y | Y | | Y | | |
| Luxembourg | | | Y | N | | |
| Netherlands | | Y | Y | N/K | | |
| Norway | | | Y | Y | Synergi | |
| Poland | | Y | Y | Y | Excel | Y |
| Portugal | | Y | Y | N | | |
| Romania | Y | Y | Y | N/K | | |
| Slovakia | Y | | Y | N | | |
| Slovenia | | | Y | Y | Excel | |
| Spain | Y | | | N | | |
| Sweden | Y | | | Y | | |
| Switzerland | | | Y | Y | Oracle | |
| UK | | | Y | Y | N/K | |

N/K – not known

## 4.6 Conclusion

The objectives of the part of the study addressing a Common Occurrence Reporting system were:

- Is it feasible to establish a European-wide database and what would be the benefits of an EU-wide occurrence reporting regime and what would be the optimal scope and arrangements for such reporting?
- What would be a most sensitive common taxonomy for occurrence?

The output of task 1 is that it is clearly feasible to establish a Common Occurrence Reporting system. All Member States operate some form of occurrence reporting albeit with a wide variety of approaches. As such agreeing the detail of what should be reported using such a system is quite feasible. Selecting the most frequently reported occurrences captured by the existing regimes would allow this to be done at as low a cost as possible in the immediate term. In the longer term it will be possible to extend the Common Occurrence Reporting system on an incremental basis as it is agreed that further occurrences should be added to it.

What is needed to support a Common Occurrence Reporting system is explored in tasks 3 and 4, including the benefits that arise from this. Collecting data is not a zero cost or even a low cost undertaking and unless benefit accrues both at the EU level and the National or even railway level, then it can be anticipated that there will be a reluctance to engage in the process. Agreeing what the objective of a Common Occurrence Reporting system should be will in turn influence the taxonomy of the system.

For this reason a hybrid approach to developing a taxonomy is proposed that combines a taxonomy driven by the anticipated benefits with a taxonomy driven by ease of reporting (i.e. occurrences that are already being widely reported).

# **APPENDIX 1** THE SURVEY OF NATIONAL SAFETY AUTHORITIES.

**Welcome**

Dear Sir/Madam,

The European Railway Agency has been reviewing the existing frameworks for reporting and analysis of safety occurrences (accidents and incidents) in view of considering a common framework for sharing occurrence information.

In this context, the Agency has commissioned Det Norske Veritas Germanischer Lloyd (DNV GL) (UK) to carry out the "Prospective study into the development of a common occurrence reporting for the EU railway system and into a common approach to suicides on railway premises" on its behalf.

The objectives of the study are threefold:

· Provide an overview of the occurrence reporting practice in MSs, including a detailed description of information collected.

· Determine the costs and benefits of sharing occurrence information at EU level considering various scenarios.

· Determine the costs of suicides on EU railways and establish the benefits of sharing relevant data

DNV GL is performing a survey to understand the content and context of the occurrence reporting in Member States, in order to map the existing practices and in order to get information needed to feed an impact assessment.

All the information provided will only be used to support this study.

I would like to kindly ask you for your cooperation and notably for providing relevant information. Please respond by 14th February 2015.

**Welcome**

In a railway context an occurrence is any incident which endangers a train, its passengers, or any other person, or which if not corrected would endanger them. This includes level crossing users and trespassers. The system for structured classification of information related to an occurrence is referred to as taxonomy.

The purpose of this short survey is twofold:

- to identify the roles, responsibilities and obligations for national occurrence reporting in each Member State (reporting regime);

- to identify the high level characteristics of existing national occurrence reporting systems (taxonomy).

Survey of Occurrence Reporting on Railways in the EU on Behalf of the European Railway Agency

Specific details of individual databases will be followed up in a second survey of database owners.

Your input to the survey will assist in determining if a common approach to the collection and reporting of occurrences at an EU level is of benefit and how it might best be done.

The survey is designed to take approximately 30 minutes to complete and should be completed in a single session i.e. part answers cannot be saved.

The survey is in English, but please respond in your own language if you would like. If you have any questions about the survey please contact:

Jonathan Ellis

Jonathan.ellis@dnvgl.com

+44 7768 114510

If you would like to discuss the survey with a DNV GL representative in your own language please call or e-mail Jonathan Ellis and he will arrange this either over the telephone or through a local DNV GL office.

**Your Organisation**

1. Please can you provide a contact for further information

Name

Email Address

Phone Number

Your contact information is only collected by DNV GL in order to allow potential further contact in the context of this project. It will not be passed to a third party or used outside this project.

2. Please state which country you are responding for?

3. What is the name of your organisation?

**Occurrence Reporting Regime**

4. In your country, are single rail safety occurrences systematically(*) and individually(**) reported by RUs/IMs to a third party (e.g. Ministry, NSA, NIB, Safety Board,...)?

Yes

No

If yes please state who the third party receiving the reports is? e.g. Ministry of Transport, NSA, NIB, Safety Board

* Systematically means that rail safety occurrences are regularly reported using a standard process within a defined regime

** Individually means that each details on each safety occurrence are reported, such as date and location, rather than a collective response of 15 serious accidents occurred during the year.

5. Please can you explain and/or provide a link to any guidance on which occurrences are to be reported (applicable scope and criteria)?

If you wish relevant documents or files can be e-mailed to jonathan.ellis@dnvgl.com

6. Is occurrence reporting in your country a legal requirement (mandatory) or voluntary?

It is mandatory

It is voluntary

7. If the occurrence reporting is mandatory please could you provide references to all relevant legislation (and list all relevant articles).

(Please do not include Railway Safety Directive (2004/49/EC) transposed legislation).

8. What are your nationally collected occurrence reports used for? (please tick all that apply)

Other (please specify)

To provide data that is required by the ERA

To inform our supervision activities as an NSA

To provide information to the NIB

It is collated into a database of accidents, incidents and near misses

It is collated into a risk model that seeks to model the level of risk on the railway in our country

**Occurrence Reporting Regime**

9. Who in your country is responsible for collecting occurrence reports (i.e. who do the RUs/IM send the reports to)? (please tick all that apply)

National Safety Authority

Ministry

Other (please specify)

10. Who can report an occurrence (submit an occurrence report)? (please tick all that apply)

Infrastructure Manager

Railway undertaking

Member of the public

Other (please specify)

11. Is a standard form(s) used to report each single occurrence?

Yes

No

12. If Yes please provide a link(s) to the occurrence reporting form(s) used showing the information or variables reported.

If you wish relevant documents or files can be e-mailed to jonathan.ellis@dnvgl.com

13. How quickly should occurrences be reported (e.g. within one week of the occurrence happening)?

14. If the occurrence reports are held in a database(s) please can you provide a link(s) to the database(s) or to any description of them.

15. Please provide contact details for person(s) responsible for these database(s)

**Suicide on Railway Premises**

In a railway context a suicide is the intentional death of an individual on the railway network.

Suicides on the railway network are associated with not just the tragic loss of the individual but also delay to passengers and shock and trauma to the railway staff having to witness the individual's death or the recovery of their body.

In order to identify best practice in addressing this, the European Railway Agency (ERA) wishes to understand how the national authorities collate and record suicide data on railways. In particular how suicide events are distinguished from accidents involving an unauthorised person or trespasser.

The purpose of this survey is to identify the roles, responsibilities, motivations and scope for suicide reporting in each Member State of the EU.

Your input to the survey will assist in determining whether a common approach to the collection and reporting of railway suicides at an EU level might be of benefit and how it might best be done.

**Who collects and holds the data?**

16. In your country, is each rail suicide event systematically and individually reported by RUs/IMs to a third party (e.g. Ministry, NSA, NIB, Safety Board,...)?

Yes

No

17. If suicide events are reported to third parties, are they reported using the same process as any other railway occurrence, or are they subject to separate reporting?

Suicide events are reported using the same process as other railway occurrences

Suicide events are reported separately to other railway occurrences

18. If suicide events are subject to separate reporting (database outside the general rail occurrence database), to whom are they are reported (who maintains the database)?

19. Which types of suicide events are individually and systematically reported? (please tick all that apply)

Those attempts resulting in death?

Those attempts resulting in an injury?

Those attempts not resulting in injury?

20. Is a standard form used to report each suicide event?

Yes

No

21. If Yes please provide a link(s) to the suicide event reporting form(s) used showing the information or variables reported. If you wish relevant documents or files can be e-mailed to jonathan.ellis@dnvgl.com

22. Does anyone else in your country collect data on attempted suicides on railway premises? ( please tick all that apply)

No

NIB

NSA

The Infrastructure Manager

The Police

The Railway Undertaking

The health service

Yes - Other (please specify)

**Guidance on Suicide and Attempted Suicide**

23. Who in your country is responsible for determining if an occurrence is a suicide or a trespass accident? (please tick all that apply)

Police

Doctor

Coroner

Judge

Infrastructure Manager

Railway Undertaking

NSA

Other (please specify)

24. What are the criteria used to determine if an event is a suicide or a trespass accident? Could you describe them and provide the reference/link to them?

25. For an attempted suicide (not resulting in death), is the same organisation as in Question 23 responsible for determining if it was a suicide attempt as opposed to a trespass accident or near miss?

Yes

No

If No please state which organisation is responsible?

**How is the data used?**

26. What do you use data on suicide on railway premises for? (please tick all that apply)

The data is not collected

The data is used by the infrastructure manager or railway undertaking to design measures to reduce suicide on the railway e.g. erect fencing

The data is used by the police to direct their activities

Other (please specify)

27. Please enter any further comments you would like to make regarding the collection of data on suicide, attempted suicide or accidents to trespassers.

# APPENDIX 2 THE SURVEY OF THE INFRASTRUCTURE MANGERS

**Welcome**

Dear Sir/Madam,

The European Railway Agency has been reviewing the existing frameworks for reporting and analysis of safety occurrences (accidents and incidents) in view of considering a common framework for sharing occurrence information. In this context, the Agency has commissioned Det Norske Veritas Germanischer Lloyd (DNV GL) (UK) to carry out the "Prospective study into the development of a common occurrence reporting for the EU railway system and into a common approach to suicides on railway premises" on its behalf.

The objectives of the study are threefold:

· Provide an overview of the occurrence reporting practice in MSs, including a detailed description of information collected.

· Determine the costs and benefits of sharing occurrence information at EU level considering various scenarios.

· Determine the costs of suicides on EU railways and establish the benefits of sharing relevant data

DNV GL is performing a survey to understand the content and context of the occurrence reporting in Member States, in order to map the existing practices and in order to get information needed to feed an impact assessment.

All the information provided will only be used to support this study.

I would like to kindly ask you for your cooperation and notably for providing relevant information.

Please respond by 14th June 2015.

**Introduction**

In a railway context, occurrence means an accident or incident (as defined in article 3 of the Railway Safety Directive), or any operational interruption, defect, fault or other irregular circumstance that has or may have influenced railway safety and that has not resulted in an accident. The system for structured classification of information related to an occurrence is referred to as taxonomy.

We have previously surveyed (February to March 2015) the National Safety Authorities regarding:

- the roles, responsibilities and obligations for national occurrence reporting in each Member State (reporting regime);

- the high level characteristics of existing national occurrence reporting systems (taxonomy).

We now wish to follow this up with a survey of the sector. In particular with the intention to get an understanding on what occurrence data is collected and held in databases.

Your input to the survey will assist in determining if a common approach to the collection and reporting of occurrences at an EU level is of benefit and how it might best be done.

The survey is designed to take approximately 30 minutes to complete and should be completed in a single session i.e. part answers cannot be saved.

The survey is in English, but please respond in your own language if you would like. If you have any questions about the survey please contact:

Jonathan Ellis

Jonathan.ellis@dnvgl.com

+44 7768 114510

If you would like to discuss the survey with a DNV GL representative in your own language please call or e-mail Jonathan Ellis and he will arrange this either over the telephone or through a local DNV GL office.

**Your Organisation**

Name

Company

Country

Email Address

Phone Number

1. Please could you provide your organisation name and contact details.

**Occurrence Reporting**

2. Does your organisation systematically and individually collect rail occurrence data?

Yes

No

* Systematically means that rail safety occurrences are regularly reported using a standard process within a defined regime

** Individually means that all details on each safety occurrence are reported, such as date and location, rather than a collective response of 15 serious accidents occurred during the year

3. What is the purpose of this? (please tick all that apply)

As a central part of our Safety Management System to monitor safety performance?

As a part of our management of maintenance?

As part of the mandatory (regulatory) reporting towards the NSA.

Other (please describe as fully as possible)

Please describe any other data that you collect

4. Please could you indicate which types of occurrence you collect data on (please tick all that apply).

Significant accidents

Non-significant accidents

Accidents and incidents on railway premises (without train involved)

Accidents and incidents to staff such as track workers

Precursors to an accident - asset failure

Precursors to an accident - irregular working (not following rules correctly)

Specifically for suicides - attempted suicide

Specifically for suicides - near misses (these are instances in which an individual visits the railway for the purpose of suicide but does not attempt it e.g. due to staff intervention)

5. Do you have any guidance on what should be reported?

(in any language, link possible...)

Other - Can you describe the data collected please

6. If you do collect data on attempted or near miss suicide please could you describe what information is recorded?

The same data as for incidences of suicide

No data is collected on attempted suicides or near misses

Other (please specify)

7. How are occurrences reported?

A standard form is used?

The occurrence is first recorded in an operational or daily log before being copied into a database?

8. In what timeframe should occurrences be reported?

Immediately

Within a day

Within a week

Other (please specify)

9. Who reports the occurrences?

Any member of staff

Dedicated staff

Signaller

Control room staff

Other (please specify)

10. Is the data collected held in one database or many?

A single database contains all occurrence data

Separate databases contain accident/incident data and precursor data

If more than one database is used please state how many separate databases you have.

11. If you have more than one database do they link up or communicate which each other?

Not relevant, we only have one database

No, the databases are separate and do not link to one another

Partially, the databases are separate but can export data from one to another for reporting

Yes, the separate databases are fully integrated for both reporting and analysis. Relevant precursors link directly to recorded accidents such as wrong side signalling failures linking to SPADS and then train collision accidents.

12. Please could you describe the taxonomy of your database(s) in terms of the fields of data (variables) that they contain? If possible please include a link to any document describing these or e-mail any relevant attachment to jonathan.ellis@dnvgl.com.

13. Please indicate which type of software is used for running the database(s) (e.g. Excel, SQL, Access...) or if it is a commercial package could you indicate which one e.g. Synergi.

14. For how many years do you have occurrence data for e.g. the last 10 years or since 1988?

Other (please specify)

15. Is the occurrence data that you hold confidential, publically available or made available to a limited number of organisations?

It is publically available

It is confidential

A limited number of organisations have access to the data

16. What is the data used for? (please tick all that apply)

Safety reporting to the NSA

Safety reporting and management within our own company

Planning maintenance activities

Sharing time critical information such as defective components

Input for risk assessment and risk evaluation

Other (please specify)

Database 1

Database 2

Database 3

Database 4

Database 5

Database 6

17. For each database please could you indicate approximately how many records are entered each year.

18. Would you be interested in sharing some occurrence data with other IMs?

Yes

No

If yes, which? Please explain under which conditions

**Cost of Occurrence Reporting**

Please can you provide an indication of the cost of collecting the data and running the database. This can be as a monetary cost in Euros or an indication of the number of people engaged in a task.

If you do not have details for each of the questions 10-15 please provide an overall estimate of the costs or number of people engaged in running the databases, data collection and processing data in Question 16

The information is collected by DNV GL for the purpose of cost benefit analysis. Please tick to box below if you wish this information to be treated confidentially (not passed to third party, such as ERA).

19. Please treat my data as confidential.

Yes

20. The annual cost of any IT hardware.

21. The annual cost of any IT software.

22. The annual cost of data collection or how many persons are engaged in collecting and reporting data as their main activity in your company.

23. The annual cost of data input into the database or how many persons are engaged in data input as their main activity in your company.

24. The annual cost of data checking or validation or how many persons are engaged in checking and validating data as their main activity in your company.

25. The annual cost of data analysis and reporting or how many persons are engaged in analysing the data and generating reports.

26. Please make any further comment on the costs or benefits of the reporting system you employ.

27. Are there any other points that you would like to make regarding the use of occurrence reporting, databases or the cost of this?

**Suicide on railway Premises Reporting**

**Suicides on railway premises are a specific group of events that may be reported among other railway occurrences. We wish to get a better understanding of the reporting practices and impacts of these events.**

28. Thinking of the issue of suicide or attempted suicide on railway premises. Do you keep data on the impact of this in terms of the number of delayed trains, how long the delay was?

Yes

No

29. Please could you estimate the number of delayed trains and delay minutes experienced in a typical year due to suicide events (leading to a death of a person).

30. Do you place a monetary value on a delayed train or a delay minute?

Yes

No

Please could you state what the value is in Euros

31. Do you claim these costs from the family of the deceased person?

Yes - directly from the family

Yes - from the family's insurance (if they have it)

No

32. Do you have data for the impact of a suicide on railway premises to train drivers or other railway staff in terms of trauma experienced and subsequent time off work, counselling etc..? Please provide as much data as possible on the impact of this.

33. Do you compensate railway undertakings for delay costs due to suicide events?

Yes

No

If possible please state the monetary value of a loss of life that you use

34. Do you use a monetary value to reflect the loss of life of the victim of suicide such as a Value of Preventing a Fatality (VPF) or similar?

Yes - it is the same value we use for victims of other accidents

Yes - it is a different value to the one we use for victims of other accidents

No

35. What other data do you include (if any) when you calculate the costs of suicide on railway premises?

Please provide as much data on these costs or state "not applicable".

36. What criteria or guidelines do you use to determine if a fatality is a suicide or an accident? Please describe or provide a link. If you would prefer documents can be sent to jonathan.ellis@dnvgl.com.

Please provide a link to this guidance if possible or send a copy to jonathan.ellis@dnvgl.com

37. The role of the police is often to determine if a fatality is an accident, a criminal act or a suicide. Do you know what criteria or guidelines the police use to make this decision?

Yes

No

if yes please can you describe these or provide a link to any documents

38. Do you have a programme of activities directed towards reducing suicides on your railway premises?

Yes

No

39. If yes could you give an estimate of how much money is spent annually on suicide reduction measures?

40. Are there any further comments you would like to make on the issue of suicide on railway premises and its impact/cost to the railway?

# **APPENDIX 3** SURVEY OF THE RAILWAY UNDERTAKINGS

**Welcome and Introduction**

Dear Sir/Madam,

The European Railway Agency has been reviewing the existing frameworks for reporting and analysis of safety occurrences (accidents and incidents) in view of considering a common framework for sharing occurrence information.

In this context, the Agency has commissioned Det Norske Veritas Germanischer Lloyd (DNV GL) (UK) to carry out the "Prospective study into the development of a common occurrence reporting for the EU railway system and into a common approach to suicides on railway premises" on its behalf.

The objectives of the study are threefold:

· Provide an overview of the occurrence reporting practice in MSs, including a detailed description of information collected.
· Determine the costs and benefits of sharing occurrence information at EU level considering various scenarios.
· Determine the costs of suicides on EU railways and establish the benefits of sharing relevant data

DNV GL is performing a survey to understand the content and context of the occurrence reporting in Member States, in order to map the existing practices and in order to get information needed to feed an impact assessment.

All the information provided will only be used to support this study.

I would like to kindly ask you for your cooperation and notably for providing relevant information.
Please respond by 25th September 2015.

**Introduction**

In a railway context, occurrence means an accident or incident (as defined in article 3 of the Railway Safety Directive), or any operational interruption, defect, fault or other irregular circumstance that has or may have influenced railway safety and that has not resulted in an accident. The system for structured classification of information related to an occurrence is referred to as taxonomy.

We have previously surveyed (February to March 2015) the National Safety Authorities regarding:

- the roles, responsibilities and obligations for national occurrence reporting in each Member State (reporting regime);
- the high level characteristics of existing national occurrence reporting systems (taxonomy).

We now wish to follow this up with a survey of the sector. In particular with the intention to get an understanding on what occurrence data is collected and held in databases. Your input to the survey will assist in determining if a common approach to the collection and reporting of occurrences at an EU level is of benefit and how it might best be done.

The survey is designed to take approximately 30 minutes to complete and should be completed in a single session i.e. part answers cannot be saved. If you would like a pdf or word version of the survey to prepare answers in advance please contact

jonathan.ellis@dnvgl.com.

The survey is in English, but please respond in your own language if you would like. If you have any questions about the survey please contact:

Jonathan Ellis
Jonathan.ellis@dnvgl.com
+44 7768 114510

If you would like to discuss the survey with a DNV GL representative in your own language please call or e-mail Jonathan Ellis and he will arrange this either over the telephone or through a local DNV GL office.

**Your Organisation**

**Name**
**Company**
**Country**
**Email Address**
**Phone Number**

1. Please could you provide your organisation name and contact details.

**Occurrence Reporting**

2. Does your company systematically and individually collect rail occurrence data independently of the IM or NSA?

Yes
No - The IM collects rail occurrence data
No- Another body collects rail occurrence data (please indicate below the type of body and its name).

* Systematically means that rail safety occurrences are regularly reported using a standard process within a defined regime
** Individually means that all details on each safety occurrence are reported, such as date and location, rather than a collective response of 15 serious accidents occurred during the year

3. What is the purpose of this? (please tick all that apply)

As a central part of our Safety Management System to monitor safety performance and to assess risk?

As a part of our management of maintenance?

As part of the mandatory (regulatory) reporting towards the NSA.

Other (please describe as fully as possible)

Please describe any other data that you collect

4. Please could you indicate which types of occurrence you collect data on (please tick all that apply).

Significant accidents

Non-significant accidents

Accidents and incidents on railway premises (without train involved)

Accidents and incidents to staff such as track workers, train drivers, vehicle maintainers

Precursors to an accident - asset/rolling stock failure

Precursors to an accident - irregular working (not following rules correctly)

Specifically for suicides - completed suicides (resulting in a fatality)

Specifically for suicides - attempted suicide (not resulting in a fatality)

Specifically for suicides - near misses (these are instances in which an individual visits the railway for the purpose of suicide but does not attempt it e.g. due to staff intervention)

If voluntary is it confidential? Please explain below.

5. Is this reporting mandatory (stated by law or regulation) or voluntary?

Mandatory

Voluntary

6. Do you have any formal guidance on what should be reported?

(in any language, link possible...)

Other - Can you describe the data collected please

7. If you do collect data on attempted or near miss suicide please could you describe what information is recorded?

The same data as for incidences of suicide

No data is collected on attempted suicides or near misses

Other (please specify)

8. How are occurrences reported?

A standard form is used?

The occurrence is first recorded in an operational or daily log before being copied into a database?

9. In what timeframe should occurrences be reported?

Immediately

Within a day

Within a week

Other (please specify)

10. Who reports the occurrences?

Any member of staff

Dedicated staff

Other (please specify)

11. Is the data collected held in one database or many?

A single database contains all occurrence data

Separate databases contain accident/incident data and precursor data

Separate databases hold occurrence data needed for mandatory and voluntary reporting

If more than one database is used please state how many separate databases you have.

12. If you have more than one database do they link up or communicate which each other?

Not relevant, we only have one database

No, the databases are separate and do not link to one another

Partially, the databases are separate but can export data from one to another for reporting

Yes, the separate databases are fully integrated for both reporting and analysis. Relevant precursors link directly to recorded accidents such as wrong side signalling failures linking to SPADS and then train collision accidents.

13. Please could you describe the taxonomy of your database(s) in terms of the fields of data (variables) that they contain? If possible please include a link to any document describing these or e-mail any relevant attachment to jonathan.ellis@dnvgl.com.

14. Please indicate which type of software is used for running the database(s) (e.g. Excel, SQL, Access...) or if it is a commercial package could you indicate which one e.g. Synergi.

15. For how many years do you have occurrence data for e.g. the last 10 years or since 1988?
Other (please specify)

16. Is the occurrence data that you hold confidential, publically available or made available to a limited number of organisations?

It is publically available

It is confidential

A limited number of organisation have access to the data

17. What is the data used for? (please tick all that apply)
Safety reporting to the NSA

Safety reporting and risk management within our own company

Planning maintenance activities

Sharing time critical information such as defective components

Input for risk assessment and risk evaluation

Other (please specify)

Database 1

Database 2

Database 3

18. For each database please could you indicate approximately how many records are entered each year (please include the name of the database or information allowing identification of the database).

19. Would you be interested in sharing or exchanging some occurrence data with other RUs or IMs?

Yes

No

If yes, which? Please explain under which conditions

If possible please explain your answer

20. Would you find useful a guidance from the Agency on common reporting of occurrences (occurrence types and their taxonomy)?

Yes

No

**Cost of Occurrence Reporting**

Please can you provide an indication of the cost of collecting the data and running the database. This can be as a monetary cost in Euros or an indication of the number of people engaged in a task. If you do not have details for each of the questions 10-15 please provide an overall estimate of the costs or number of people engaged in running the databases, data collection and processing data in Question 16

This information is collected by DNV GL for the purpose of cost benefit analysis. Please tick to box below if you wish this information to be treated confidentially (not passed to third party, such as ERA).

21. Please treat my data as confidential.

Yes

22. The annual cost of any IT hardware.

23. The annual cost of any IT software.

24. The annual cost of data collection or how many persons are engaged in collecting and reporting data as their main activity in your company.

25. The annual cost of data input into the database or how many persons are engaged in data input as their main activity in your company.

26. The annual cost of data checking or validation or how many persons are engaged in checking and validating data as their main activity in your company.

27. The annual cost of data analysis and reporting or how many persons are engaged in analysing the data and generating reports.

28. Please make any further comment on the costs or benefits of the reporting system you employ.

29. Are there any other points that you would like to make regarding the use of occurrence reporting, databases or the cost of this?

**Reporting of Suicide on Railway Premises**

**Suicides on railway premises are a specific group of events that may be reported among other railway occurrences. We wish to get a better understanding of the reporting practices and impacts of these events.**

30. Thinking of the issue of suicide or attempted suicide on railway premises. Do you keep data on the impact of this in terms of the number of delayed trains, how long the delay was?

Yes

No

31. Please could you estimate the number of delayed trains and delay minutes experienced in a typical year due to suicide events (leading to a death of a person).

32. Do you place a monetary value on a delayed train or a delay minute?

Yes

No

Please could you state what the value is in Euros

33. Do you have data for the impact of a suicide on railway premises to train drivers or other railway staff in terms of trauma experienced and subsequent time off work, counselling etc..? Please provide as much data as possible on the impact of this.

Please state the type and name of the organisation providing compensation

34. Do you receive compensation for delay costs due to suicide events?

Yes - we are compensated by the IM

Yes - we are compensated by the NSA

Yes - we are compensated by the estate or relatives of the deceased

Yes - we are compensated by the deceased's insurance

Yes - we are compensated by a different organisation (please state who below)

No - we receive no compensation

35. What other data do you include (if any) when you calculate the costs of suicide on railway premises e.g. Value per Fatality prevented? Please provide as much data on these costs or state "not applicable".

if yes please can you describe these or provide a link to any documents

36. Do you have a programme of activities within your own organisation directed towards reducing suicides on your railway premises?

Yes

No

37. If yes could you give an estimate of how much money is spent annually on suicide reduction measures?

Please State the organisation leading the suicide reduction measure

38. Do you participate in any suicide reduction measures that are led by the IM, NSA or other Government organisation

Yes (please specify below the organisation that leads the suicide reduction measure e.g. IM, NSA...)

No - we are not invited to participate

No - we choose not to participate

39. If yes could you give an estimate of how much money is spent annually on suicide reduction measures under this programme?

40. Are there any further comments you would like to make on the issue of suicide on railway premises and its impact/cost to the railway?

# **APPENDIX 4** THE OUTPUT OF THE SURVEY OF NATIONAL SAFETY AUTHORITIES

| | | | |
|---|---|---|---|
| | **Austria** | **Regime**<br>Mandatory | **Purpose**: To provide the data required by the ERA for CSI reporting. |

**Legislation:** MeldeVO-Eisb 2006 (BGBl. II Nr. 279/2006)
http://www.ris.bka.gv.at/GeltendeFassung.wxe?Abfrage=Bundesnormen&Gesetzesnummer=20004874

**Description of the legislation**: This legislation specifies the reporting of various accident and incident occurrence types. The legislation applies to all railway companies (Railway Undertaking and Infrastructure Manager) operating over:

1) Main and Branch lines
2) Connecting railway or sidings
3) Urban tramways

The reporting is to the NSA and NIB. The time to report is dependent on the severity of the accident. Accidents with severe consequences should be reported immediately by telephone, others may be reported in writing the next business day or for those deemed least significant in terms of consequence they should be reported by the end of January as a summary of the previous calendar year.

The severity of the accident is determined by the presence of fatalities or serious injuries, if damage greater than €500,000 occurred or if "sensational" media coverage can be expected.

| **The occurrence types that must be reported are:** | **To whom:** To the NSA and the NIB. | **By whom:** Infrastructure Manager, Railway Undertaking and Police) | **By when**: Immediately for the most serious accidents, next business day for others. Incidents can be reported annually. |
|---|---|---|---|
| • Derailments<br>• Collisions<br>• Derailments or collision with engineering trains<br>• Shunting accidents (derailments and collisions)<br>• Level crossing accidents | | | |

| | |
|---|---|
| • Fire and explosion<br>• Fatalities form the operation of rolling stock<br>• Unauthorised train movements<br>• Driving without an order<br>• Two trains in an occupied track section<br>• Runaway train<br>• Serious technical failures on infrastructure or rolling stock<br>• Passenger accidents at platforms<br>• Accidents to track workers | **Uses**: To inform the supervision activities of the NSA. To provide statistical queries and reports. |
| **How to report?**: by phone or electronic form | **Standard form**: Yes, but is not publically available. A separate standard reporting form for sidings is publically available at: http://versa.bmvit.gv.at/index.php?id=401&L=0 |

**Fields to be reported for sidings are:**

- Notifying company
- Contact
- E-Mail
- Phone (mobile)
- Date of registration
- Type of event (collision, Derailment, Level Crossing Accident, Runaway Train, Fire, Explosion, Hazardous Materials Incident, Fatality of Serious Injury from an operational issue or irregular working, other)
- Event Date
- Event Time
- Locality
- Course/consequences
- Root Cause
- Number of injured/killed (by Trespasser, Infrastructure worker, Railway Undertaking worker)
- Description of the journey
- Hazardous materials yes/no

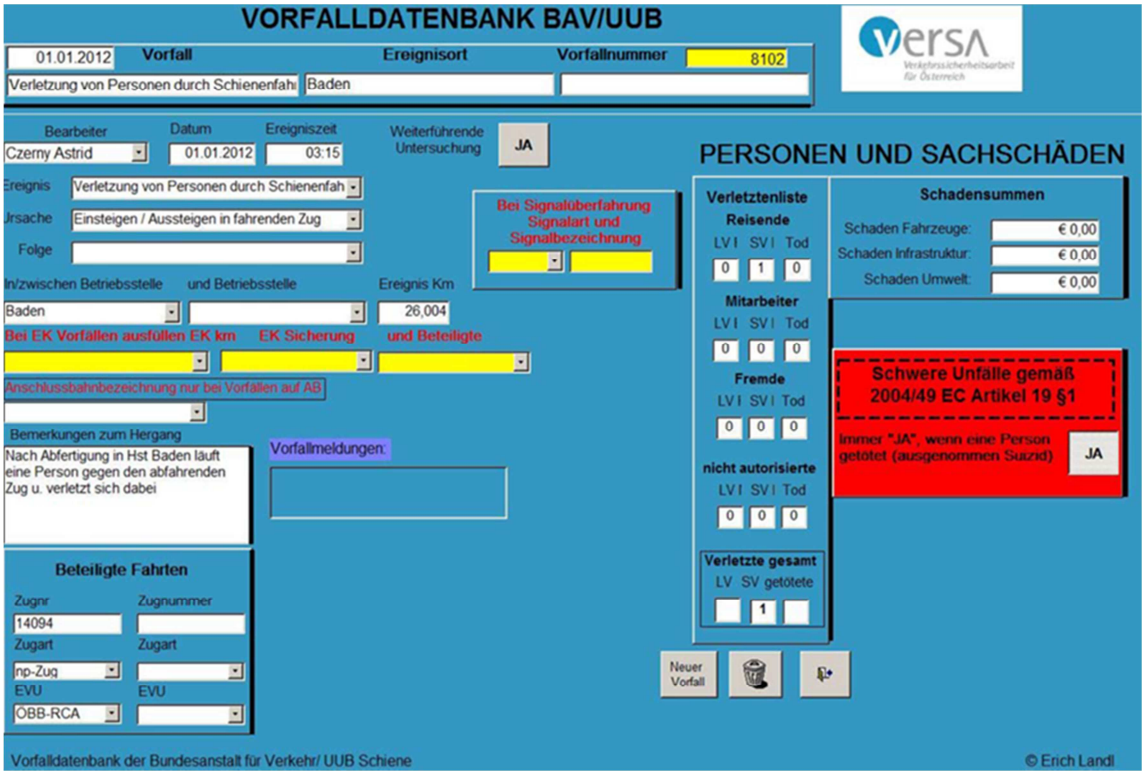
**Database details**

| | | |
|---|---|---|
| **Holder:** The Austrian National Investigation Body (Sicherheitsuntersuchungsstelle des Bundes) | **Confidential** Yes. No public access | **Link:** Summary reports are available from: http://versa.bmvit.gv.at/index.php?id=400&L=0 |

| | | |
|---|---|---|
| **Use:** This is used to generate reports, run queries and provide the information required for the Common Safety Indicators. | | |
| **Established:** 2007 | **Number of entries a year:** 1500 | **Software:** TBC |
| **Size of Database:** Approximately 11,000 accidents and incidents | | |

**Further Information:** In 2013, the development a new national database started. The database currently under development is designed to deliver an unrestricted exchange of data between the database and ERAIL, and perform need based queries and generate reports. The test run of the new national Database started in September 2014. The intent of the database is that it will allow movement of data between it and ERAIL.

A screen shot of the existing 2013 database is:



| Belgium | Regime | Purpose: To deliver the reporting requirements for the CSIs, the notification of accidents/incidents to the NIB. |
|---|---|---|
| | Mandatory | |

Legislation: See art. 93 and annex 7 of . - Loi portant le Code ferroviaire du 30 AOUT 2013

Description of the legislation: Notification of serious accidents; accidents and incidents which under different circumstances might have led to a serious accident; a leak or risk of a leak of hazardous material resulting in an evacuation or the triggering of the response plan; any event causing a total interruption of rail traffic on a line of over two hours. Further the infrastructure manager must provide details of all events which prima facie constitute an accident, incident or influence operational safety during the last 24 hours.

| What must be reported: all accidents or incidents over last 24 hours (Daily Log). | To whom: To NIB | By whom: Infrastructure Manager and where appropriate Railway Undertaking | By when: within 3 days |
|---|---|---|---|

| How to report? | Standard form: No. Legislation lays down the fields required to be reported. Web based form (XML-file) to facilitate reporting can be used. |
|---|---|

Fields to be reported: Date, time, location. Facts. Action taken. Causes. Consequences (collision, derailment, fire, obstructing traffic, leakage dangerous goods, explosion). Victims. Environmental and other damages.

Database details

| Holder: NIB | Confidential Yes | Link: None provided as confidential |
|---|---|---|

Use: To supply data to the NSA and federal Transport Departments

| Established: 2010 | No. records a year: 6,500 | Software: FileMaker |
|---|---|---|

Further Information: Screen shots provided. A further database exists that records daily events that the Infrastructure Manager has a legal duty to report. 12,000 reports made annually.

<table>
<tr><td rowspan="2"> </td><td rowspan="2">Bulgaria</td><td>Regime</td><td rowspan="2">Purpose:<br>To provide data that is required by the ERA.<br>To inform supervision activities as an NSA</td></tr>
<tr><td>Mandatory</td></tr>
<tr><td colspan="4">Legislation:<br>In Bulgarian:<br>„Правила за уведомяване и ред за назначаване на оперативна група за запазване, регистриране и съхраняване на веществените доказателства при възникване на железопътни произшествия и инциденти“, издадени от управителя на железопътната инфраструктура, на основание чл.69, ал. 2 от<br>Наредба № 59 от 5.12.2006 г. за управление на безопасността в железопътния транспорт.<br><br>In English:<br>Notification Rules and Procedures for the appointment of a task force for preserving, recording and storing material evidence in case of railway accidents and incidents ", issued by the railway infrastructure manager, pursuant to Article 69 para. 2 Ordinance № 59 of 5.12.2006 management of railway safety.</td></tr>
<tr><td colspan="4">Description of the legislation:<br><br>Ordinance № 59 of 5.12.2006 management of railway safety.<br>"Art. 69. (1) Upon the occurrence of railway accidents and incidents officials carrier or rail infrastructure or persons performing activities in construction,<br>repair, maintenance and operation of the railway infrastructure, take immediate measures to:<br><br>1. prevent other accidents or incidents;<br>2. notify relevant officials;<br>3. preservation of evidence, including visible and perishable evidence, such as ice, soot, etc., by photographing or other appropriate ways;<br>4. The provision of information concerning the names and addresses of all witnesses, testimony of which can be useful in the investigation.<br>(2) Upon occurrence of an accident or incident must be notified to the Ministry of Interior, the Executive Agency "Railway Administration" Specialized unit for investigation of accidents and incidents in rail Ministry of Transport</td></tr>
<tr><td>The occurrence types that must be reported are:<br>Accidents in railway transport are:<br>collisions, derailments, accidents at railway crossings, accidents to persons caused by rolling stock in motion, fires and others<br><br>Other events are broken rail, deformed railroad, overtaking the signal for danger, broken wheels and axles on rolling stock in operation and malfunction in the signalling system, under which the signalling is less restrictive than required.</td><td>To whom:<br>National Safety Authority, NIB and Ministry of Interior</td><td>By whom:<br>Infrastructure Manager, Railway undertaking, Employee of a company carrying out activities in construction, repair, maintenance and operation of the railway infrastructure.</td><td>By when:<br>Immediately</td></tr>
</table>

| | | |
|---|---|---|
| | **Uses**:<br>To provide data that is required by the ERA.<br>To inform our supervision activities as an NSA.<br>It is collated into a database of accidents, incidents and near misses.<br>To provide information to the NIB. | |
| **How to report?**:<br>Emergency telephone number | **Standard form**:<br>Yes | |
| **Fields to be reported are:**<br>1. Date, time and place of notification<br>2. Name of the manager of the railway infrastructure<br>3. Kvitantsionen message number<br>4. Date, time and place of occurrence of the railway accident<br>5. Brief description of the accident, including: Type and registration number of the railway vehicle, train №, driver, name of carrier; Name, address and nationality of the injured officers or outsiders; Other data related to the accident.<br>6. Phone Number Feedback<br>7. Name, surname and title of the person making the communication.<br><br>There are a further set of similar recording requirements relating to the preservation of evidence. These are presented in the taxonomy sheet. | | |
| **Database details** | | |
| **Holder:**<br>NSA | **Confidential:**<br>No information provided | **Link:**<br>No information provided |
| **Use:**<br>To provide data that is required by the ERA.<br>To inform our supervision activities as an NSA.<br>It is collated into a database of accidents, incidents and near misses.<br>To provide information to the NIB. | | |
| **Established:**<br>No information provided | **Number of entries a year:**<br>No information provided | **Software:**<br>No information provided |
| **Size of Database:**<br>No information provided | | |
| **Further Information:** | | |

| Channel Tunnel - United Kingdom | **Regime**<br>Mandatory | **Purpose**:<br>To provide data that is required by the ERA.<br>To inform supervision activities as an NSA |
|---|---|---|

**Legislation:**
Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 mandates the requirements for reporting of incidents, including on the railway.
http://www.legislation.gov.uk/uksi/2013/1471/contents/made

2013 No. 407 CHANNEL TUNNEL HEALTH AND SAFETY The Channel Tunnel (Safety) (Amendment) Order 2013
Regulation of the Inter-Governmental Commission on the safety of the Channel Fixed Link as amended - clauses 8, 9 and 10
http://www.channeltunneligc.co.uk/spip.php?action=acceder_document&arg=261&cle=8b77ec27b3ab475293bea41306f123e5&file=pdf%2F130228_Order_FINAL.pdf

**Description of the legislation**:
**RIDDOR** applies to all industries, with specific provisions for railways. RIDDOR applies to railways, tramways and any other system using guided transport. Certain exclusions apply, such as anything below a gauge of 350 millimetres (unless it crosses a carriageway), guided bus systems etc. (A full list is provided within the guidance document). http://orr.gov.uk/__data/assets/pdf_file/0010/2332/riddor-guidance.pdf

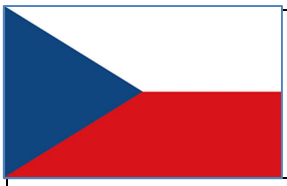
**Channel Tunnel Safety Order**
8 .The Concessionaires and the railway undertakings shall provide information on request to the Intergovernmental Commission on any question relating to safety. In addition, they shall advise the Intergovernmental Commission immediately of:
(i) serious accidents on the railway system;
(ii) any other accidents or incidents which fall within categories specified and notified to them by the Intergovernmental Commission.

9 .The Concessionaires and any railway undertakings which use the Common Section shall, on request, provide to the Intergovernmental Commission appropriate information on significant incidents, incidents from which worthwhile safety lessons may be learned, and investigations that are likely to have relevance to the safety of the railway system.

10 .In order to monitor and evaluate the implementation of the safety requirements applicable to the Fixed Link, and without prejudice to its rights under the Concession to receive reports and information from the Concessionaires, the Intergovernmental Commission shall collect relevant material through the common safety indicators and through any other indicators relating to the Fixed Link which it thinks appropriate.

<table>
<tr><td rowspan="2">The occurrence types that must be reported are:<br>Under RIDDOR:<br>Specified accidents and incidents. All fatalities and major injuries and those involving absence from work of over 7 days.</td><td>To whom:<br>The NSA (Office or Rail Regulation) receives RIDDOR reports.</td><td>By whom:<br>Infrastructure Manager, Railway undertaking</td><td>By when:<br>A RIDDOR report must be submitted within 10 days, or 15 if the incident relates to a person being incapacitated for more than 7 consecutive days. NIR reports must be made within 24 hours.</td></tr>
<tr><td colspan="3">Uses:<br>To provide data that is required by the ERA.<br>To inform supervision activities as an NSA.</td></tr>
<tr><td colspan="2">How to report?:<br>On-line</td><td colspan="2">Standard form:<br>Yes</td></tr>
<tr><td colspan="4">Fields to be reported are:<br>The failure of a tunnel, bridge, viaduct, culvert, station or other structure or any part of it including the fixed electrical equipment of an electrified relevant transport system;<br>Any failure in the signalling system which could cause a significant risk to the safe passage of trains other than a failure of a traffic light controlling the movement of vehicles on a road;<br>A slip of a cutting or of an embankment;<br>Flooding of the permanent way;<br>The striking of a bridge by a vessel or by a road vehicle or its load;<br>The failure of any other portion of the permanent way or works<br>Any train, travelling on a running line or entering a running line from a siding, passing a signal displaying a stop aspect without authority, unless the stop aspect was not displayed in sufficient time for the driver to stop safely at the signal<br>If there was a fire (not on the train) where did it occur?<br>If there was an obstruction on the line, what type of obstruction was there?<br>If there was a Wrong Side Failure, what type of failure occurred?</td></tr>
<tr><td colspan="4">Database details</td></tr>
<tr><td colspan="2">Holder:<br>National Safety Authority</td><td>Confidential:<br>Yes.</td><td>Link:<br>N/A</td></tr>
<tr><td colspan="4">Use:<br>To provide data that is required by the ERA.<br>To inform NSA supervision activities.</td></tr>
<tr><td>Established:<br>N/A</td><td>Number of entries a year:<br>N/A</td><td colspan="2">Software:<br>N/A</td></tr>
<tr><td colspan="4">Size of Database:<br>N/A</td></tr>
<tr><td colspan="4">Further Information: Bi-national Regulations reports do not have a standard form.</td></tr>
</table>

<table>
<tr><td rowspan="2"> </td><td rowspan="2">Croatia</td><td>Regime</td><td rowspan="2">Purpose: To advise the NIB when an accident/incident requiring investigation has occurred and to provide the data required by ERA.</td></tr>
<tr><td>Mandatory</td></tr>
<tr><td colspan="4">Legislation: Law on safety and interoperability of the railway system consolidated text of the law NN 82/13 , 18/15 Article 119 (2)<br>http://www.zakon.hr/z/649/Zakon-o-sigurnosti-i-interoperabilnosti-%C5%BEeljezni%C4%8Dkog-sustava</td></tr>
<tr><td colspan="4">Description of the legislation: The infrastructure manager and the railway undertaking must, within the safety management system, establish procedures to ensure that accidents, incidents, accidents avoided and other dangerous occurrences are reported, studied and analysed, and to take the necessary measures for their prevention.</td></tr>
<tr><td>What must be reported: Accidents, incidents, accidents avoided and other dangerous occurrences.</td><td>To whom: To NSA and NIB</td><td>By whom: railway Undertakings and Infrastructure Managers</td><td>By when: As soon as possible. Reports to be provided within 6 months for an accident and 3 months for an incident.</td></tr>
<tr><td>How to report?</td><td colspan="3">Standard form: No. events may be registered with the authorities at www.azi.hr/eventregistration.aspx?id=5 which is a free text means of alerting the NSA and NIB.</td></tr>
<tr><td colspan="4">Fields to be reported: Free text. Reporters are invited to supply such information that they have and presumably the NIB and NSA follow this up as appropriate.</td></tr>
<tr><td colspan="4">Database details</td></tr>
<tr><td>Holder: Agencija za istraživanje nesreća u zračnom, pomorskom i željezničkom prometu</td><td>Confidential: No</td><td colspan="2">www.azi.hr/public.aspx?id=1</td></tr>
<tr><td colspan="4">Use: Press releases by year giving the accidents and incidents being investigated.</td></tr>
<tr><td>Established: 2014 for rail accidents</td><td>No. records a year: 4</td><td colspan="2">Software: web pages</td></tr>
<tr><td colspan="4">Further Information:</td></tr>
</table>

<table>
<tr><td>  </td><td>Czech Republic</td><td>Regime<br>Mandatory</td><td>Purpose: To provide data for CSI reporting, to monitor against CSTs and for the general development of railway safety</td></tr>
<tr><td colspan="4">Legislation:<br><br>266/1994 Coll. Act dated December 14, 1994:<br>http://www.dicr.cz/uploads/dokumenty/266_1994_140829.pdf<br><br>no. 376/2006 Coll. DECREE 17 July 2006 the system of rail operation safety and rail transport, and procedures for dealing with emergencies events on tracks<br>http://www.dicr.cz/uploads/dokumenty/376_2006.pdf</td></tr>
<tr><td colspan="4">Description of the legislation:<br>no. 376/2006 Coll<br>§ 7 Procedure for an extraordinary event in the rail transport<br>(1) The operator and the railway undertaking shall establish separate or joint reporting units that provide notification of emergency, according the activities in the business.<br>(2) If the incident involving the operation of a rail or rail transport operation, railway operator and carrier ensures that each employee or a person with a contractual relationship or the railway, who with their work activities involved in the operation of a rail or operation of rail transport immediately reported to a designated reporting workplace its creation, unless event found themselves or learned about it credibly.<br>(3) Reporting the workplace after an extraordinary event in the rail operation and rail transport by its nature be carried out without undue delay measures to prevent further damage and immediately announces creation of incidents<br>a) The Rail inspection under § 8,<br>b) the Police of the Czech Republic, in the case of an incident resulting in death, bodily harm, substantial damage to Property 3) or to the environment, and in all cases where there is a reasonable suspicion that the formation incident occurred as a result of the offense,<br>c) Operational and Information Centre Fire and Rescue Service of the Czech Republic, or emergency medical service, if it is necessary to provide rescue 4) and cannot conduct its own means railway operator and carrier. The notification shall include the date, time and place of the incident and a brief description of the consequences, the name of the reporter and communication links to it.<br>(4) The operator and the railway undertaking provides for the needs of rapid reporting emergencies own organizational measures in the form of the reporting schedule. Reporting schedule is part of the management system rail operation safety and rail transport operation; must be updated at least once a year and must be accessible to all workplaces that railway operator and carrier commissioned reporting of emergencies.</td></tr>
<tr><td>The occurrence types that must be reported are:<br>Collision or derailment of railway vehicle.<br>Collision of rail vehicles with road vehicles at a road crossing.<br>Death or injury of persons in connection with moving rolling stock.<br>Fires of rail vehicles and events causing</td><td>To whom:<br>National Safety Authority<br>and NIB</td><td>By whom:<br>Infrastructure Manager,<br>Railway undertaking</td><td>By when:<br>Immediately</td></tr>
</table>

| | |
|---|---|
| considerable damage<br>Threats means incidents threatening the regularity and continuity of the operation of railway transport, the safety of persons and the safe operation of the buildings and equipment caused by the operation of railways and railway transport, with an impact on the safe operation of railways and railway transport, or an event caused by the leakage of dangerous goods, or a threat to the immediate risk leakage of dangerous goods in transport by rail, which is not a serious accident or incident. | **Uses**:<br>To provide data that is required by the ERA.<br>To provide information to the NIB. |

| | |
|---|---|
| **How to report?**<br>By telephone or by electronic remote connection or telecommunications equipment. | **Standard form**:<br>No |

**Fields to be reported are:**
The notice shall specify the date, time and place of extraordinary event, a brief description and consequences, i.e. the number of deaths and injuries, preliminary damage estimate and estimated time restriction or cessation of rail transport.

**Database details**

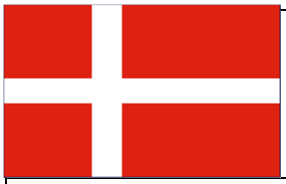
| | | |
|---|---|---|
| **Holder:**<br>The NIB holds details of events occurring on the network | **Confidential:**<br>Accident reports published on web-site | **Link:**<br>http://www.dicr.cz/zaverecne-zpravy-z-mu |

**Use:**
To provide data for CSI reporting, to monitor against CSTs and for the general development of railway safety

| | | |
|---|---|---|
| **Established:** N/A | **Number of entries a year:** N/A | **Software:** N/A |

**Size of Database:** N/A

**Further Information:**
The response did not indicate they have a formal database. An indirect contact was provided to the NIB for follow-up.

|  | **Denmark** | **Regime**<br>Mandatory | **Purpose**: To provide data for CSI reporting, to monitor against CSTs and for the general development of railway safety |
|---|---|---|---|

**Legislation:** https://www.retsinformation.dk/Forms/R0710.aspx?id=144528
In Danish:
"Bekendtgørelse om ændring af bekendtgørelse om indberetning af data vedrørende ulykker, forløbere til ulykker og sikkerhedsmæssige uregelmæssigheder m.v. til Trafikstyrelsen"

In English:
"Order amending the Order [Executive Order no. 575 of 25 May 2010] on transmission of data on accidents , precursors to accidents and dangerous occurrences etc. for Transport Authority"

**Description of the legislation**:
Provides a description of the Directives that are implemented by this order, and then a description of the format (in a standard form) and details of what is to be reported.

Associated guidance is provided, here:

http://www.trafikstyrelsen.dk/~/media/Dokumenter/03%20Jernbanesikkerhed/09%20Rapporter/Vejledning%20til%20indberetningsbek%20december%202010.ashx
In Danish: "Vejledning Indberetning og registrering af ulykker, forløbere til ulykker og sikkerhedsmæssige uregelmæssigheder"
In English: "Instructions Reporting and recording of accidents, precursors to accidents and dangerous occurrences"

| **The occurrence types that must be reported are:** | **To whom:** | **By whom:** | **By when**: |
|---|---|---|---|
| 1. Collision<br>2. Derailment<br>3. Level crossing accident<br>4. Injury caused by rolling stock in motion<br>5. Train fires<br>6. Damage > 1.2 million kr.<br>7. Traffic delay > 6 hours<br>8. Suicide<br>9. Accident involving DG, as required by 1.8.5 of RID / ADR<br>10. Precursors: broken rails, track defects | Trafikstyrelsen (Danish Transport Authority) | Railway undertakings, infrastructure managers and heritage railways and persons undertaking safety roles | 1 March annually. (Note that the NIB is the first recipient of the notification of an occurrence - according to separate communication between DNV GL and Trafikstyrelsen) |

<table>
<tr><td>requiring speed restriction or closure; signal failure; SPAD; broken wheels or axles<br>11. Injuries: Passengers; staff (inc contractors); crossing users; trespassers</td><td colspan="2">Uses:<br>To provide data for CSI reporting, to monitor against CSTs and for the general development of railway safety. To populate a database.</td></tr>
<tr><td>How to report?:<br>Electronically in compatible format. Heritage railways can supply data through form</td><td colspan="2">Standard form:<br>Yes</td></tr>
<tr><td colspan="3">Fields to be reported are:<br>Category of accident, precursor to accident or safety irregularities etc. The selected category must reflect the primary event, in relation to the context it occurred. (see definitions)<br>Accidents<br>Train collision<br>Derailment<br>Accidents at level crossings<br>Personal injury with rolling stock in motion<br>Fire in rolling stock<br>Other<br>Dangerous goods<br>Accidents involving a railway vehicle with dangerous goods<br>Accidents in which the release of dangerous goods<br>Suicide<br>Precursors to accidents<br>• Rail Break<br>• Buckling<br>• Signal error<br>• Pass-by stop signal<br>• Defective wheels and axles<br>• Dangerous occurrences<br>• Risk of person collision<br>• Brake Malfunctions<br>• The irregularities at crossing<br>• Deformation of the tracks<br>• Error signalling<br>• Profile conditions<br>• Vandalism<br>• Other</td></tr>
</table>

| Database details | | |
|---|---|---|
| **Holder:**<br>Trafikstyrelsen (Danish Transport Authority) | **Confidential:**<br>Yes. | **Link:**<br>N/A |

**Use:**
Trafikstyrelsen uses the database to report information required to the European Railway Agency and for their own preventive rail safety work, etc. Data used include in the compilation of safety indicators and safety targets.

Safety indicators are divided into seven categories:
1. Accident
2. Dangerous goods
3. Suicide
4. Precursors to accidents
5. Societal costs of accidents
6. Technical safety and the introduction of technical security
7. Security Management

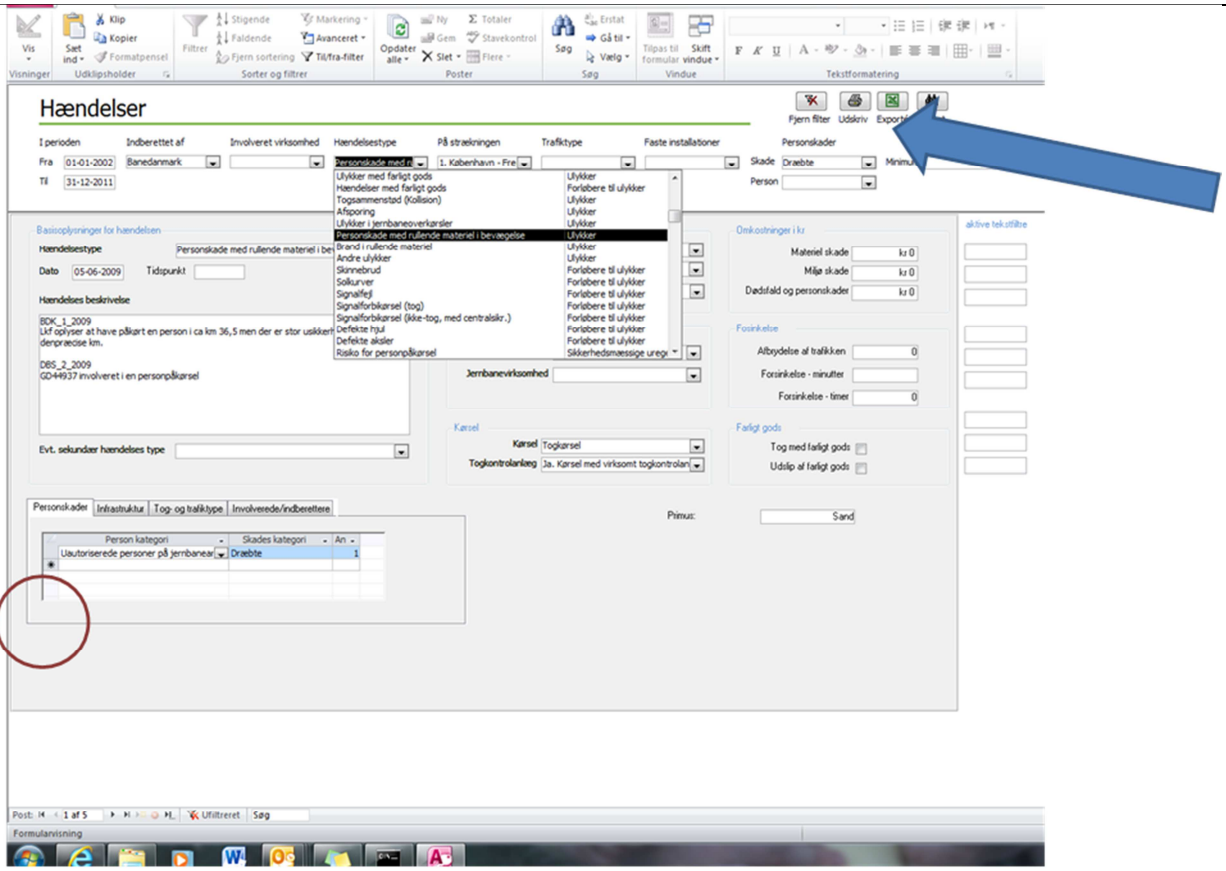
Trafikstyrelsen's own annual safety report contains an overview of all safety indicators and the company's assessment of the evolution of safety. The annual report is a collection of more detailed information, particularly within the indicators point 1-5.

Trafikstyrelsen uses this information for the preparation of risk assessments for the railroad as part of the preventive safety work and to the annual safety of the railway.

| **Established:**<br>2010 (although data has been collected since 1994) | **Number of entries a year:**<br>about 3500 per year | **Software:** The Safety Database is compiled in Microsoft Office Access 2003 |
|---|---|---|

**Size of Database:**
Currently about 65,000 entries

**Further Information:**
Screenshot of the interface. On the top (marked with a blue arrow) you can choose settings for you search the settings you can choose: timespan (I perioden), Who reported the event? (Indberettet af), company involved? (involveret virksomhed), event? (hændelsestype), where? (på strækningen), traffic type? (Trafikstype), installations (faste installationer), injurie type (Skade), person (person), costs (omkostninger).


Hændelser
Fjern filter
Udskriv
I perioden
Indberettet af
Involveret virksomhed
Hændelsestype
På strækningen
Trafiktype
Faste installationer
Personskader
Fra 01-01-2002
Til 31-12-2011
Banedanmark
Personskade med rullende materiel i bevægelse
1. København - Fre
Skade Dræbte
Person
Ulykker med farligt gods
Hændelser med farligt gods
Togsammenstød (Kollision)
Afsporing
Ulykker i jernbaneoverkørsler
Brand i rullende materiel
Andre ulykker
Skinnebrud
Solkurver
Signalfejl
Signalforbikørsel (tog)
Signalforbikørsel (ikke-tog, med centralsikr.)
Defekte hjul
Defekte aksler
Risiko for personpåkørsel
Basisoplysninger for hændelsen
Hændelsestype
Dato 05-06-2009
Tidspunkt
Hændelses beskrivelse
BDK_1_2009
Ukf oplyser at have påkørt en person i ca km 36,5 men der er stor usikkerhed omkring den præcise km.
DBS_2_2009
GD44937 involveret i en personpåkørsel
Evt. sekundær hændelses type
Jernbanevirksomhed
Kørsel
Kørsel Togkørsel
Togkontrolanlæg Ja. Kørsel med virksomt togkontrolan
Omkostninger i kr
Materiel skade kr 0
Miljø skade kr 0
Dødsfald og personskader kr 0
Forsinkelse
Afbrydelse af trafikken 0
Forsinkelse - minutter
Forsinkelse - timer 0
Farligt gods
Tog med farligt gods
Udslip af farligt gods
Primus:
Sand
Personskader
Infrastruktur
Tog- og trafiktype
Involverede/indberettere
Person kategori
Skades kategori
Uautoriserede personer på jernbanear
Dræbte
1
Post: 1 af 5
Ufiltreret
Søg
Formularvisning

<table>
<tr><td rowspan="2"> </td><td rowspan="2">Estonia</td><td>Regime</td><td rowspan="2">Purpose: To provide data for CSI reporting, to monitor against CSTs and for the general development of railway safety</td></tr>
<tr><td>Mandatory</td></tr>
<tr><td colspan="4">Legislation:<br>Railways Act (https://www.riigiteataja.ee/en/eli/ee/527012015009/consolide/current);<br><br>For TDG: Ohutusnõuniku koolituse õppekava, kutseoskusnõuded ja koolitustunnistuse vorm (https://www.riigiteataja.ee/akt/129122010041)</td></tr>
<tr><td colspan="4">Description of the legislation:<br>Railway infrastructure managers and other possessors of railway infrastructure shall immediately notify the Technical Surveillance Authority of an accident and serious accident. Initial notice shall be given of such facts through any disclosed means of communication, followed by a written notice.<br><br>A railway infrastructure manager or other possessor of railway infrastructure shall notify the Technical Surveillance Authority of an incident by a written report which shall be submitted to the Technical Surveillance Authority after the causes of the incident and other circumstances have been investigated but not later than within five working days after the occurrence of the incident.<br>A railway infrastructure manager or other possessor of railway infrastructure and a railway undertaking or other possessor of railway vehicles shall submit the data of safety indicators for the previous calendar year to the Technical Surveillance Authority by 1 June.<br><br>A railway infrastructure manager or other possessor of railway infrastructure and a railway undertaking or other possessor of railway vehicles shall submit the data of safety indicators for the previous calendar year to the Technical Surveillance Authority by 1 June.</td></tr>
<tr><td>The occurrence types that must be reported are:<br>Accident means an unexpected event or series of events in consequence of which damage is caused, such as collision of a train with another train or shunting railway vehicles, collision of a train with an obstruction, derailment of a train, an accident occurring at the railway crossing, railway vehicles hitting a person, fire of railway vehicles and other such accidents in consequence of which damage is caused.</td><td>To whom:<br>NSA and NIB</td><td>By whom:<br>Infrastructure manager and railway undertakings</td><td>By when:<br>Immediately for accidents and serious accidents.<br>Within five working days of an incident.</td></tr>
</table>

| | |
|---|---|
| **The occurrence types that must be reported are (continued):**<br>Serious accident means collision or derailment of a train which causes death of a person or serious physical harm to at least five people as a result of which railway vehicles, railway infrastructure or the environment is damaged to the extent of at least two million euros by estimation of the<br>Safety Investigation Bureau and other such accidents which clearly affect railway safety.<br><br>Incident means an event related to the use of a train which is not an accident or serious accident, but which affects the safety of use of a train, such as breaking of a rail, deformation of a rail track, obstructions due to incorrect railway traffic light signals, passing of a railway traffic light signal in an emergency and breaking of a wheel or axle of a running train | **Uses**:<br>To provide data that is required by the ERA.<br>To inform supervision activities by the NSA.<br>It is collated into a database of accidents, incidents and near misses.<br>It is collated into a risk model. |

| | |
|---|---|
| **How to report?**<br>Immediate by any available means. In writing thereafter | **Standard form**:<br>For Dangerous goods |

**Fields to be reported are:**
N/A

**Database details**

| | | |
|---|---|---|
| **Holder:**<br>Technical Regulatory Authority (NSA EE) | **Confidential:** | **Link:**<br>Limited data available here:<br>http://tja.ee/statistika-3/ |

**Use:**
To provide data for CSI reporting, to monitor against CSTs and for the general development of railway safety

| Established: | Number of entries a year: | Software: |
|---|---|---|
| **Size of Database:** | | |

**Further Information:**
Limited information is provided at http://tja.ee/statistika-3/

2014

| Kokkupõrked ülesõidukohtadel 2014 | | | |
|---|---|---|---|
| | Õnnetused kokku | Vigastatud | Hukkunud |
| I kvartal | 0 | 0 | 0 |
| II kvartal | 2 | 12 | 2 |
| III kvartal | 3 | 0 | 3 |
| IV kvartal | 0 | 0 | 0 |
| Aasta kokku | 5 | 12 | 5 |

| Pealesõidud jalakäijatele 2014 | | | |
|---|---|---|---|
| | Õnnetused kokku | Vigastatud | Hukkunud |
| I kvartal | 4 | 2 | 2 |
| II kvartal | 4 | 2 | 1 |
| III kvartal | 3 | 2 | 1 |
| IV kvartal | 4 | 1 | 3 |
| Aasta kokku | 15 | 7 | 7 |

| | **Finland** | **Regime**<br>Mandatory | **Purpose**: Informing ERA of their CSIs. Internally it is used for monitoring against CSTs and to check the requirement/ implementation of additional preventative safety measures. Nationally it is used for monitoring safety and as data for identifying and analysing risks. |
|---|---|---|---|

**Legislation:**

Rautatielaki (Finnish Railway Act) 8.4.2011/304, 82§
http://www.finlex.fi/fi/laki/ajantasa/2011/20110304

Valtioneuvoston asetus rautatieliikenteen turvallisuudesta ja yhteentoimivuudesta (Government Decree on the Safety and Interoperability of Railways) 895/2015
https://www.finlex.fi/fi/laki/alkup/2015/20150859

**Description of the legislation**:

**Rautatielaki (Finnish Railway Act) 8.4.2011/304, 82§**
**http://www.finlex.fi/fi/laki/ajantasa/2011/20110304**

Accident and incident reporting. The railway operator and infrastructure manager shall, in addition to any other law, notify the Finnish Transport Safety Agency without delay of any accidents and incidents. In paragraph 1 above for information on the Openness of Government Activities Act § 24 the Finnish Transport Safety Agency can keep the information referred to confidential if information it would jeopardize access to information in the future.

**Valtioneuvoston asetus rautatieliikenteen turvallisuudesta ja yhteentoimivuudesta (Government Decree on the Safety and Interoperability of Railways) 372/2011, 3§**

Incidents and accidents associated with more accurate disclosure of information.
The railway operator and infrastructure manager shall be informed in writing of the Finnish Transport Safety Agency details become aware of the rail network of past accidents and incidents in which they were involved, without delay, but no later than five days after receiving the information about the incident. The notification can also be made using an electronic notification procedure.
An accident means an unwanted or unintended sudden event or a chain of such events which have harmful consequences. Involved in the incident means an event that is not an accident, associated with the operation of trains and affecting the safety. Danger score is also considered to be events that could lead to an accident and other dangerous events.
More specifically, the information to include a brief description of events to be reported, the information on the time and place of the event, event type, event participant, as well as the event of the estimated direct cause and its consequences. In addition, in more detail in the information to include information on the event and the damage caused by the event contact person.
If the declarant did not notice when an individual possess all the accident or incident related to the consequences of the event or damage data, the missing data must be submitted to the Finnish Transport Safety Agency as soon as possible, but no later than the event the following year by 30 June. Missing data may also be submitted electronically

<table>
<tr><td rowspan="2">The occurrence types that must be reported are:<br><br>For passengers/ public see separate sheet.</td><td>To whom:<br>According to national law they are reported to the NSA. Many of them are reported also to the NIB.</td><td>By whom:<br>Infrastructure Manager, Railway undertaking, Member of the public</td><td>By when:<br>Short SMS immediately after the occurrence from the traffic control (24/7). More detailed report within 2 weeks.</td></tr>
<tr><td colspan="3">Uses:<br>To provide data that is required by the ERA.<br>Aggregated data is used to inform NSA supervision activities.<br>It is collated into a database of accidents, incidents and near misses<br>It is collated into risk assessment and analysis that seeks to model the level of risk on the railway<br>To provide information to the NIB.<br>One of the information sources to the risk based supervision<br>General monitoring of railway safety<br>One of the sources for the annual national safety performance report</td></tr>
<tr><td>How to report?:<br>To the NSA by SMS and later report</td><td colspan="3">Standard form:<br>Yes</td></tr>
<tr><td colspan="4">Fields to be reported are:<br>Passenger or a third party notice the lack of safety of railway operations<br>Use this form to notify the Traffic controller of a lack of safety in rail transport.<br>Observation Date<br>Time<br>Place / Location<br>railway line<br>position<br>platform<br>railway yard<br>grade crossing<br>other place<br>Tell specify where the safety deficiency occurred (municipal, regional, more accurate location).<br>Example: Helsinki Central Station, the platform 8 or the Port of Turku company X case.<br>Venue<br>A description of what happened<br>surname<br>first name<br>e-mail</td></tr>
</table>

<table>
<tr><td colspan="3">phone</td></tr>
<tr><td colspan="3">Database details</td></tr>
<tr><td>Holder:<br>National Safety Authority</td><td>Confidential:<br>Database but the access is only for the few people by username and password.</td><td>Link:<br>N/A</td></tr>
<tr><td colspan="3">Use:<br>Monitoring of safety (including trends) identifying and analysing risks</td></tr>
<tr><td>Established:<br>2015</td><td>Number of entries a year:<br>1500+</td><td>Software:<br>Q-Pulse (previously Excel)</td></tr>
<tr><td colspan="3">Size of Database:<br>1500</td></tr>
<tr><td colspan="3">Further Information:<br>Response:<br>"Our database as it is now is quite recent. The big RU (former state railways) reports their incidents and accidents digitally direct from their system to our system. We have for the time being Q-Pulse which is also used in occurrence reporting in aviation. We have had the data coming in from RU since last summer, so it is too early to say how many occurrences there are each year. Now we have around 1500 cases in total. We have agreed that the RU transfers the cases after they are closed (should be in two weeks after the occurrence).<br><br>The big IM (the one for the state owned railway network) is developing their own system and we hope to get reports from them still before the summer. They will also be transferred digitally to Q-Pulse. The traffic controllers used to report to the RU system but since the beginning of this year they are using the system of the IM. Also because of that it is impossible to give the number of reports.<br><br>The smaller railway stakeholders use the railway safety report (which is attached)."</td></tr>
</table>

<table>
<tr><td> </td><td>France</td><td>Regime<br>Mandatory</td><td colspan="2">Purpose:<br>To report against CSIs and to set the framework for occurrence reporting in France</td></tr>
<tr><td colspan="5">Legislation:<br>Articles 12 and 15 of French decree “décret 2006-1279”:<br>http://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000000788918<br><br>and articles 22 and 24 of French order “arrêté du 19 mars 2012”:<br>http://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000025582663<br>provide the legal requirements regarding which occurrences are to be reported.</td></tr>
<tr><td colspan="5">Description of the legislation:<br>Currently, the occurrences are reported immediately, up to D+1 after the occurrence happened.<br><br>There is a project underway to modify this requirement to:<br>- Immediately up to 24h after the occurrence happened for the first declaration.<br>- Second report and analyse of the occurrence before 30 days after the occurrence happened.</td></tr>
<tr><td colspan="2" rowspan="2">The occurrence types that must be reported are:<br>a) Any derailment on main track or impacting a main track;<br>b) Any railway traffic collision on main track;<br>c) Runaway train or rolling stock;<br>d) Any accident in which damage is estimated at least 2 million Euro;<br>e) Any collision on a level crossing with tangible consequences;<br>f) Any hazardous material accident to report under Annex II of the Decree of 29 May 2009 referred to above;<br>g) Any rolling stock fire requiring the intervention of public emergency services or the evacuation of passengers;<br>h) Any accident or incident that resulted in the presence of a large number of passengers on major routes;<br>i) Any accident or incident that could, under slightly different circumstances, have serious consequences, such as a particular train collision or derailment on main track</td><td>To whom:<br>EPSF (French NSA)</td><td>By whom:<br>Infrastructure Manager, Railway undertaking.<br><br>Any person who contacts EPSF can also report an occurrence</td><td>By when:<br>Immediately</td></tr>
<tr><td colspan="3">Uses:<br>To provide data that is required by the ERA.<br>To inform supervision activities of the NSA.<br>It is collated into a database of accidents, incidents and near misses<br>Collected occurrence reports are also used in order to develop the return of experience (sharing between operators in order to improve safety) led by EPSF</td></tr>
<tr><td colspan="2">How to report?:<br>Today, occurrences are reported to EPSF by email or by access to a</td><td colspan="3">Standard form:<br>At present no, but it is the intention to introduce a standard form as part of the project described in the legislation</td></tr>
</table>

| | | | |
|---|---|---|---|
| IM database. | description entry | | |
| **Fields to be reported are:**<br>There is no standard form at present | | | |
| **Database details** | | | |
| **Holder:**<br>Etablissement Public de Sécurité Ferroviaire | | **Confidential:**<br>N/A | **Link:**<br>N/A |
| **Use:**<br>To report against CSIs and to set the framework for occurrence reporting in France | | | |
| **Established:**<br>N/A | **Number of entries a year:**<br>N/A | **Software:**<br>N/A | |
| **Size of Database:**<br>N/A | | | |
| **Further Information:**<br>N/A | | | |

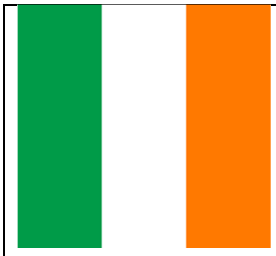
<table>
<tr><td rowspan="2"> </td><td rowspan="2">Germany</td><td>Regime</td><td rowspan="2">Purpose: Informing ERA of their CSIs. Internally it is used for monitoring against CSTs and to check the requirement/ implementation of additional preventative safety measures.</td></tr>
<tr><td>Mandatory</td></tr>
<tr><td colspan="4">Legisaltion:<br>Eisenbahn-Unfalluntersuchungsverordnung (EUV), Artikel 2 Absatz 3,<br>http://www.eba.bund.de/SharedDocs/Publikationen/DE/GesetzeundRegelwerk/Bundesrecht/11_euv.pdf?__blob=publicationFile&v=1<br><br>Guidance "Allgemeinverfüqunq der Eisenbahn-Unfalluntersuchungsstelle des Bundes (EUB)"<br>http://www.eba.bund.de/SharedDocs/Publikationen/EUB/DE/sonstige_Downloads/60_allgvfg_Unfallmeldung.pdf;jsessionid=2E307A5B09608DA0682904E927CE62B8.live2053?__blob=publicationFile&v=5</td></tr>
<tr><td colspan="4">Description of the legislation:<br>Eisenbahn-Unfalluntersuchungsverordnung (EUV), Artikel 2 Absatz 3, states:<br>"(3) Eisenbahninfrastrukturunternehmen haben dem Eisenbahn-Bundesamt sämtliche gefährliche Ereignisse im Eisenbahnbetrieb unverzüglich zu melden. Die Untersuchungsbehörde kann eine bestimmte Form der Meldung vorschreiben.<br><br>(3) Railway infrastructure companies have to report all dangerous events in the railway operating the railway Federal Office without delay. The investigating authority may prescribe a particular form of the message.<br><br>The guidance provides more detailed description of meanings and reporting details and subsequent investigation processes.</td></tr>
<tr><td colspan="2" rowspan="2">The occurrence types that must be reported are:<br>I. accident:<br>• Collision<br>• derailment<br>• Personal Accident<br>• level crossing accident (collision)<br>• Vehicle fire<br>• other accidents in railway operations<br>II disorder:<br>• passage of a train at the stop aspect<br>• Illegal entry into an occupied track section<br>• Fault at the railroad crossing<br>• Fault on the vehicle<br>• Failure to infrastructure<br>• Failure by operational error</td><td>To whom:<br>IMs have to report to the NIB.</td><td>By whom:<br>Infrastructure Manager,<br>The IM must report to the NIB. All others may report occurrences to the NIB or the NSA.</td><td>By when:<br>Immediately for certain events</td></tr>
<tr><td colspan="3">Uses:<br>It is collated into a database of accidents, incidents and near misses.<br>To provide information to the NIB.<br>May be used by NSA, but this is not a direct reporting line.</td></tr>
<tr><td colspan="2">How to report?:<br>By telephone for immediate notifications</td><td colspan="2">Standard form:<br>Yes</td></tr>
</table>

<table>
<tr><td colspan="3">Fields to be reported are:<br>For immediate reporting:<br>• reporting the railway infrastructure company point of contact and contact person<br>• Event Type<br>• Date and time<br>• Event location (station or track, route kilometres, adjacent operating points)<br>• Participating railways<br>• Train number<br>• Suspected circumstances of the hazardous event<br>• Information about the consequences (personal injury, property damage, involvement hazardous)<br>A more detailed form is used for additional reporting - see taxonomy.</td></tr>
<tr><td colspan="3">Database details</td></tr>
<tr><td>Holder:<br>NIB</td><td>Confidential:<br>Non-public database of the NIB.</td><td>Link:<br>N/A</td></tr>
<tr><td colspan="3">Use:<br>Informing ERA of their CSIs. Internally it is used for monitoring against CSTs and to check the requirement/ implementation of additional preventative safety measures.</td></tr>
<tr><td>Established:<br>N/A</td><td>Number of entries a year: N/A</td><td>Software:<br>N/A</td></tr>
<tr><td colspan="3">Size of Database:<br>N/A</td></tr>
<tr><td colspan="3">Further Information: N/A</td></tr>
</table>

<table>
<tr><td> </td><td>Greece</td><td>Regime<br>Mandatory</td><td colspan="3">Purpose: to provide the data required by the ERA, to inform the NIB and to inform NSA supervision activities.</td></tr>
<tr><td colspan="6">Legislation: Ministerial Decision No F4/oik 27887/2166 (Government Gazette B' 643/23-05-2006, see rows 31,32 of the<br>table) and Circular No99 under the title 'railway occurrences' which has been notified as a National Safety Rule.</td></tr>
<tr><td colspan="6">Description of the legislation: For an event of any severity the station master of the local area must inform relevant parties. For every event causing significant damage or threatened safety or caused fatality an investigation will be undertaken.</td></tr>
<tr><td colspan="2" rowspan="2">The occurrence types that must be reported are: an event of any severity</td><td colspan="2">To whom: NSA, Ministry, NIB, fire and police service as appropriate.</td><td>By whom: IM/RU</td><td>By when: Immediately</td></tr>
<tr><td colspan="4">Uses: To respond to the emergency and undertake an investigation if necessary</td></tr>
<tr><td colspan="2">How to report?</td><td colspan="4">Standard form: The incumbent RU has a standard form described in their SMS which may be e-mailed in.</td></tr>
<tr><td colspan="6">Fields to be reported are: N/A</td></tr>
<tr><td colspan="6">Database details</td></tr>
<tr><td colspan="2">Holder:<br>There is no database</td><td colspan="2">Confidential: N/A</td><td colspan="2">Link:<br>N/A</td></tr>
<tr><td colspan="6">Use:<br>N/A</td></tr>
<tr><td colspan="2">Established: N/A</td><td colspan="2">Number of entries a year: N/A</td><td colspan="2">Software: N/A</td></tr>
<tr><td colspan="6">Size of Database: N/A</td></tr>
<tr><td colspan="6">Further Information:</td></tr>
</table>

<table>
<tr><td rowspan="2"> </td><td rowspan="2">Hungary</td><td>Regime</td><td rowspan="2">Purpose: Informing ERA of their CSIs. Internally it is used for monitoring against CSTs and to check the requirement/ implementation of additional preventative safety measures.</td></tr>
<tr><td>Mandatory</td></tr>
<tr><td colspan="4">Legislation:<br>Act No. 184 of 2005 about the investigation of aviation, railway, water transport and other transportation<br>occurrences provides the requirement for reporting<br>http://www.kbsz.hu/j25/hu/vasuti-koezlekedes</td></tr>
<tr><td colspan="4">Description of the legislation:<br>Requires the reporting of serious accidents, railway accidents and unexpected railway occurrences.<br>Provides definitions of events to be reported for rail (and other transport modes)</td></tr>
<tr><td colspan="2" rowspan="2">The occurrence types that must be reported are:<br><br>Serious railway accidents (definition in accordance with EU legislation)<br>Railway accidents (collision, derailment, railway-crossing accident, injury caused by rolling stock in motion, fire-cases, other railway accident)<br>Unexpected railway occurrences (all other occurrences)</td><td>To whom:<br>These are reported to the NSA and NIB.</td><td>By whom:<br>Infrastructure Manager, Railway undertaking, Member of the public</td><td>By when:<br>For the NIB and Police occurrences should be reported immediately.<br>For the NSA within 24 hours.</td></tr>
<tr><td colspan="3">Uses:<br>To provide data that is required by the ERA.<br>To inform our supervision activities as an NSA.<br>It is collated into a database of accidents, incidents and near misses</td></tr>
<tr><td colspan="2">How to report?:<br>Form available on-line</td><td colspan="2">Standard form:<br>Yes</td></tr>
<tr><td colspan="4">Fields to be reported are:<br>Time, place and consequence details followed by narrative text.</td></tr>
<tr><td colspan="4">Database details</td></tr>
<tr><td colspan="2">Holder:<br>National Investigation Body</td><td>Confidential:<br>Occurrences are summarised on web-site</td><td>Link:<br>http://www.kbsz.hu/j25/hu/vasuti-koezlekedes</td></tr>
<tr><td colspan="4">Use: Informing ERA of their CSIs. Internally it is used for monitoring against CSTs and to check the requirement/ implementation of additional preventative safety measures.<br>As above</td></tr>
</table>

| | | |
|---|---|---|
| **Established:**<br>No database details available | **Number of entries a year:**<br>N/A | **Software:** N/A |
| **Size of Database:** N/A | | |
| **Further Information:** | | |

<table>
<tr><td>  </td><td>Ireland</td><td>Regime<br><br>Mandatory</td><td colspan="2">Purpose: The occurrence reporting regime within Ireland is designed to support the activities of the National Investigation Body in that it provides for rapid notification to RAIU of accidents and incidents falling within its remit.</td></tr>
<tr><td colspan="5">Legislation:<br>The legal basis of this is Railway Safety Act 2005 as amended by SI 61 of 2008 and SI 258 of 2014<br>http://www.irishstatutebook.ie/pdf/2005/en.act.2005.0031.pdf,<br>http://www.irishstatutebook.ie/2008/en/si/0061.html,<br>http://www.irishstatutebook.ie/pdf/2014/en.si.2014.0258.pdf</td></tr>
<tr><td colspan="5">Description of the legislation:<br>This legislation establishes the Railway Safety Commission (RSC) as the National Safety Authority in the Republic of Ireland and the Rail Accident Investigation Unit (RAIU) as the National Investigation Body. It is mandatory for any railway organisation experiencing an accident or incident as defined as:<br>“accident” means an unwanted or unintended sudden event or a specific chain of such events which have harmful consequences; accidents are divided into the following categories: collisions, derailments, level-crossing accidents, accidents to persons caused by rolling stock in motion, fires and others;<br><br>“extensive damage” means damage that can immediately be assessed by the Investigating Unit to cost at least €2 million in total;<br><br>“incident” means any occurrence, other than an accident or serious accident, associated with the operation of trains and affecting the safety of operation;<br><br>“serious accident” means any train collision or derailment of trains, resulting in the death of at least one person or serious injuries to five or more persons or extensive damage to rolling stock, the infrastructure or the environment, and any other similar accident with an obvious impact on railway safety regulation or the management of safety;<br>These are to be reported to the RAIU by the quickest possible means and subsequently to the RSC.</td></tr>
<tr><td>The occurrence types that must be reported are:<br>•Derailments<br>• Collisions<br>• Level crossing accidents<br>• Fire and others<br>• accidents to persons from the operation of rolling stock</td><td>To whom:<br>These are reported to the NSA and NIB.</td><td>By whom:<br>Infrastructure Manager, Railway undertaking, Member of the public</td><td>By when:<br>For the NIB and Police occurrences should be reported immediately. For the NSA within 24 hours.</td></tr>
</table>

| | | |
|---|---|---|
| | | **Uses**:<br>To provide data that is required by the ERA.<br>To inform our supervision activities as an NSA.<br>It is collated into a database of accidents, incidents and near misses |
| **How to report?**<br>Various. By quickest means possible. | **Standard form**:<br>No | |
| **Fields to be reported are:** Not relevant | | |
| **Database details** | | |
| **Holder:**<br>The RAIU maintains a list of historic and current investigation reports on its website (http://www.raiu.ie/publications/). No other database exists at a national (governmental or regulatory) level. | **Confidential:**<br>Occurrences are summarised on web-site | **Link:**<br>http://www.raiu.ie/publications/). |
| **Use:**<br>As above | | |
| **Established:**<br>No database details available | **Number of entries a year:** | **Software:**<br>Not relevant |
| **Size of Database:**<br>Not relevant | | |
| **Further Information:**<br>The mainline railway in the Republic of Ireland is served by one infrastructure manager and one main railway undertaking under the same ownership, Iarnród Éireann. Iarnród Éireann does maintain a database of accidents and incidents occurring on its network. These from the basis of the CSI reporting. In 2015 this is being upgraded to a single database on a Microsoft Dynamics CRM platform that will act as a single source of data for accidents, safety incidents and precursors. Incidents are assigned to one of a predefined hierarchical list of 700 categories of incident across 19 top level categories | | |

<table>
<tr><td> </td><td>Italy</td><td>Regime<br>Mandatory</td><td colspan="2">Purpose: The mandatory reporting of incidents to the NSA for CSI reporting, informing the NIB and planning supervision activities.</td></tr>
<tr><td colspan="5">Legislativo: point 5.4 "attribuzioni in materia di sicurezza della circolazione ferroviaria", annex A of of Decreto ANSF 4/2012<br>http://www.ansf.it/documents/19/39225/DecretoANSF_04_12_allA.pdf</td></tr>
<tr><td colspan="5">Description of the legislation: The legislation mandates the reporting of accidents, incidents and occurrences to the ANSF within 48 hours the details of all accidents and incidents that could affect the safety of the operation of trains and rail operations. This includes a notification of the occurrence within 60 minutes and a preliminary report within 24 hours. This can be achieved by giving ANSF access to relevant IM and RU databases.</td></tr>
<tr><td colspan="2">What must be reported: Details of the accident and subsequent investigation.</td><td>To whom: NSA (L'Agenzia Italiana per la Sicurezza delle ferrovie)</td><td>By whom: Infrastructure managers and Railway Undertakings</td><td>By when: first report within 60 minutes, preliminary report within 24 hours. All occurrences within 48 hours.</td></tr>
<tr><td>How to report?<br>Via IM and RU databases</td><td colspan="4">Standard form: No</td></tr>
<tr><td colspan="5">Fields to be reported: Unspecified.</td></tr>
</table>

The accidents and incidents that are of particular importance are:

Train collisions with other trains, landslides, road vehicles
Train derailments
Disruption of traffic on a line for over 6 hours
Accidents involving a moving vehicle which caused death, injury or injuries necessitating the intervention of the rescue services
Accidents involving a moving vehicle causing damage of Euro 150,000
Collisions and derailments caused by infrastructure works
Fire on a train
Decoupling of passenger trains
Runaway of vehicles
Accidents or incidents involving the release of dangerous goods
Occurrences that could have resulted in significant damage under different circumstances
1) SPADs
2) Unsafe acts
3) Releasing a train into service without appropriate safety equipment
4) Presence of defects that could cause a derailment
5) Signalling system presents a less restrictive aspect than is required
Serious accidents arising in the track system
Any occurrence at the explicit request of the Agency

| **Database details** | | |
|---|---|---|
| **Holder**: L'Agenzia Italiana per la Sicurezza delle ferrovie | **Confidential**: Y | **Link**: None available |
| **Use**: To inform the ASNF supervision activities. To analyse the causes of incidents and accidents and to provide suitable mitigating measures to be adopted as interim measures pending the completion of NIB investigations. | | |
| **Established:** 2011 | **No. records a year:** 700 | **Software:** Excel. The number of folders is equivalent to the number of incidents and accidents |
| **Further Information** | | |

<table>
<tr><td rowspan="2"></td><td rowspan="2">Latvia</td><td>Regime</td><td rowspan="2">Purpose: To provide the data required by the ERA for CSI reporting and to inform the NIB.</td></tr>
<tr><td>Mandatory</td></tr>
<tr><td colspan="4">Legislation: Procedures for the Classification, Investigation and Recording of Railway Traffic Accidents - http://www.vdzti.gov.lv/index.php?id=380&sa=354,355,356,357,358,379,380</td></tr>
<tr><td colspan="4">Description of the legislation: The legislation mandates the reporting of serious railway accidents, significant accidents and traffic safety violations to the NIB, NSA, Police, medical authorities and ministry. Forms are included in the legislation giving the detail of the notification and the scope of any subsequent investigation by the NIB. A serious accident is any collision or derailment causing a fatality or the hospitalisation of 5 injured people for 24 hours or €2 million of damage; or any traffic accident with similar consequences resulting in an unfavourable effect on safe regulation or management. A significant accident is one reflective of the requirements of the Railway Safety Directive, and a traffic safety violation is reflective of an accident pre cursor which does not have serious consequences.</td></tr>
<tr><td rowspan="2">The occurrence types that must be reported are:<br>• Collision of trains including with obstacles<br>• Train derailment<br>• Collision on a level crossing<br>• Accident to a person caused by rolling stock in motion<br>• Fire and explosion of the rolling stock<br>• Other significant accidents<br><br>• Precursors to the above</td><td>To whom: To the NSA and the NIB. Also the police, emergency services, relevant IM, relevant RU and Ministry</td><td>By whom: Infrastructure Manager, Railway Undertaking, Member of the Public</td><td>By when: Reports are to be made daily.</td></tr>
<tr><td colspan="3">Uses: To inform the supervision activities of the NSA. It is collated into a risk model that seeks to model the level of risk on the Latvian railway.</td></tr>
<tr><td>How to report?: RU and IM may determine</td><td colspan="3">Standard form:<br>Yes,http://www.vdzti.gov.lv/index.php?id=380&sa=354,355,356,357,358,379,380</td></tr>
</table>

**Fields to be reported are:**

- Date and Time
- Location
- Classification of accident
- Infrastructure (main line, station, siding..)
- Consequences to people, cost of damage, delays to rains
- Identity of IM
- Identify of RU
- Root cause of accident

**Database details**

| | | |
|---|---|---|
| **Holder:** The NSA (the State Railway Technical Inspectorate) | **Confidential** No. But no public access as internal database | **Link:** Summary reports are available from: http://www.vdzti.gov.lv/index.php?id=362&sa=359,368,360,361,362 |

**Use:** The data is collated into a risk model that seeks to model the level of risk on the railway in Latvia.

| | | |
|---|---|---|
| **Established:** 2004 | **Number of entries a year:** 26 | **Software:** Microsoft Excel |

**Size of Database:** 459 accidents

**Further Information:** A new database is currently under development.

<table>
<tr><td rowspan="2"> </td><td rowspan="2">Lithuania</td><td>Regime</td><td rowspan="2">Purpose: Informing ERA of their CSIs. Internally it is used for monitoring against CSTs and to check the requirement/ implementation of additional preventative safety measures.</td></tr>
<tr><td>Mandatory</td></tr>
<tr><td colspan="4">Legislation:<br>Regulations for the investigation of railway traffic accidents, serious accidents and incidents and emergency response, Legislation adopted by the Minister of Transport and Communications of the Republic of Lithuania, 2003.01.23 (amended as of 2015.01.01)<br>http://www.vgi.lt/en/legal-information/legislation</td></tr>
<tr><td colspan="4">Description of the legislation:<br>Provides a description of the cycle from reporting an incident to the study of it after the event. Also includes a reporting format for use.</td></tr>
<tr><td rowspan="2">The occurrence types that must be reported are:<br>See Further information</td><td>To whom:<br>NSA and NIB are third parties receiving these reports.</td><td>By whom:<br>Infrastructure Manager, Railway undertaking, Member of the public</td><td>By when:<br>Railway traffic accidents, serious accidents and incidents should be reported as soon as possible (in practice it usually takes a few hours), whereas emergency responses have to be reported within 24 hours</td></tr>
<tr><td colspan="3">Uses:<br>To provide data that is required by the ERA.<br>To inform our supervision activities as an NSA.<br>It is collated into a database of accidents, incidents and near misses.<br>It is collated into a risk model that seeks to model the level of risk on the railway.<br>To provide information to the NIB.<br>A risk model seeking to model the level of risk on the railway in Lithuania is available at https://gervis.vgi.lt/</td></tr>
</table>

<table>
<tr><td colspan="2">How to report?:<br>Immediately presumably by telephone</td><td>Standard form:<br>Yes, for an initial report and after 10 days.</td></tr>
<tr><td colspan="3">Fields to be reported are:<br>(message) unjustified passage STS (STS checklist also fill in)<br>Collision buffer stop (excl. shunting in not centrally controlled area)<br>Wrongful passage (open) crossing<br>Irregularities in / out or on platform<br>Vandalism<br>Irregularities in shunting in not centrally controlled area<br>Irregularities in work on the infrastructure<br>Irregularities in infrastructure<br>Irregularities of material<br>Irregularities with cargo<br>Others<br><br>Consequences:<br>Collision (train - train)<br>Derailment<br>Collision (train - object / road user / person)<br>Fire<br>Others<br><br>Course of Events and Handling:<br>Description of facts<br>Measures taken<br>(Probable) cause event (if suspected STS, please also complete the checklist STS)<br>A derailment, if possible, provide more information</td></tr>
<tr><td colspan="3">Database details</td></tr>
<tr><td>Holder:<br>National Safety Authority</td><td>Confidential:<br>No (at least the outputs from the risk model using the input are not confidential). Database stated as being publically accessible.</td><td>Link:<br>https://gervis.vgi.lt/</td></tr>
<tr><td colspan="3">Use:<br>As above</td></tr>
<tr><td>Established:<br>April 2013 for specialist database, previously Excel based system</td><td>Number of entries a year:<br>84</td><td>Software:<br>Specialist software, previously Excel</td></tr>
<tr><td colspan="3">Size of Database:<br>470 entries in total</td></tr>
</table>

**Further Information:**

| THE INITIAL REPORT ON THE ACCIDENT, DISASTER OR PACKAGE | |
|---|---|
| Traffic accident, disaster or rikto date and time (20 min.) | |
| Traffic accident, disaster or rikto place (station, tarpstotis, km, pk, the approach path) | |
| A railway undertaking (carrier) | |
| The Manager of the rail infrastructure | |
| With traffic in the event of a disaster or related documentation, maneuver the train or train (no and type) | |
| With traffic in the event of a disaster or the documentation involved, traction unit (No., series and type) | |
| With traffic in the event of a disaster or documentation relating to the train, the driver's name, cell phone | |
| With traffic or documentation relating to the event in terms of the number of manevrinio or railway wagons with dangerous goods of | |
| Due to a traffic accident, disaster or rikto hold up trains (numbers, numbers, and the exposure duration) | |
| Traffic accident, crash, or cause damage to persons at the time of rikto (number, names, age, sex) | |
| Traffic accident, disaster, or at the time of dead persons, rikto (number, names, age, sex) | |
| Traffic accident, crash, or a brief description of rikto | |
| Responsible for the notification of the traffic accident, disaster or the package in person (first name, last name, cell phone) | |

| | | |
|---|---|---|
| **Luxembourg** | **Regime**<br>Mandatory | **Purpose**: to provide the data required by the ERA, to inform the NIB and to inform NSA supervision activities. |

**Législation:** Loi du 30 avril 2008
Règlement grand-ducal du 7 novembre 2008

**Description of the legislation**: For an event of any severity the station master of the local area must inform relevant parties. For every event causing significant damage or threatened safety or caused fatality an investigation will be undertaken.

| | | | |
|---|---|---|---|
| **The occurrence types that must be reported are:** Accidents and Incidents as defined in the Railway Safety Directive. | **To whom:** NSA, NIB Administration des Chemins de Fer | **By whom:** IM/RU | **By when**: Immediately |
| | **Uses**: To respond to the emergency and undertake an investigation if necessary | | |

| | |
|---|---|
| **How to report?**<br>e-mail | **Standard form**: The incumbent RU has a standard form described in their SMS which may be e-mailed in. |

**Fields to be reported are:**
a) name and qualities of the informant;
b) date / time and place of the accident or incident;
c) description of the accident or incident and the extent of injuries and damage;
d) total number of people involved in the accident or incident;
e) registration of the locomotive and wagons and cars involved in the accident or incident;
f) the owners or operators of the equipment sub e);
g) driver of the traction unit;
h) train number.

**Database details**

| | | |
|---|---|---|
| **Holder:**<br>There is no database | **Confidential:**<br>N/A | **Link:**<br>N/A |

**Use:**
N/A

| | | |
|---|---|---|
| **Established:** N/A | **Number of entries a year: N/A** | **Software:** N/A |

**Size of Database:** N/A

<table>
<tr><td rowspan="2"> </td><td rowspan="2">Netherlands</td><td>Regime</td><td rowspan="2">Purpose: Informing ERA of their CSIs. Internally it is used for monitoring against CSTs and to check the requirement/ implementation of additional preventative safety measures.</td></tr>
<tr><td>Mandatory</td></tr>
<tr><td colspan="4">Legislation:<br>Spoorwegwet<br>Besluit spoorverkeer<br>Besluit bedrijfsvergunning en veiligheidscertificaat hoofdspoorwegen<br>Regeling veiligheidscertificaat hoofdspoorwegen</td></tr>
<tr><td colspan="4">Description of the legislation:<br>Mandatory reporting to the Human Environment and Transport Inspectorate all occurrences as specified in the Railway Safety Directive using a standard form.</td></tr>
<tr><td rowspan="2">The occurrence types that must be reported are:<br><br>Collision (train - train)<br>Derailment<br>Collision (train - object / road user / person)<br>Fire<br>Others</td><td>To whom:<br>National Safety Authority, Railway undertakings (e.g. suicides)<br>OVV (National Transport Investigation Board)</td><td>By whom:<br>Infrastructure Manager, Railway undertaking, Member of the public</td><td>By when:<br>ASAP.<br>If an occurrence led or could have led to threats to safety or disturbances in the availability of infrastructure, it shall be reported instantly to the Inspectorate.</td></tr>
<tr><td colspan="3">Uses:<br>To provide data that is required by the ERA.<br>To inform our supervision activities as an NSA.<br>It is collated into a risk model that seeks to model the level of risk on the railway in our country<br>To inform the National Administration on the development of rail safety.<br>To provide the National Bureau of Statistics with relevant information</td></tr>
<tr><td>How to report?:<br>Email and/or by post</td><td colspan="3">Standard form:<br>Yes<br>http://www.ilent.nl/Images/MBV%20revisie%206_1_tcm334-319628.pdf</td></tr>
</table>

**Fields to be reported are:**
General (time, location)
Weather
Type of incident
Consequence
Course of events
Injuries
Emergency Services
Witnesses

**Database details**

| **Holder:** | **Confidential:** | **Link:** |
|---|---|---|
| National Safety Authority | Yes | N/A |

**Use:**
As above

| **Established:** | **Number of entries a year:** | **Software: N/A** |
|---|---|---|
| N/A | N/A | |

**Size of Database:** N/A

**Further Information:**
No details were provided on the database but the fields reported imply some sort of recording of information.

| Norway | Regime | Purpose: |
|---|---|---|
| | Mandatory | Reporting to ERA and for improvement measures concerning railway safety |

**Legislation:** https://lovdata.no/dokument/SF/forskrift/2006-03-31-379
In Norwegian:
Forskrift om varslings- og rapporteringsplikt i forbindelse med jernbaneulykker og jernbanehendelser (varslings- og rapporteringsforskriften).

In English:
Regulations concerning notification and reporting requirements in connection with railway accidents and railway incidents (notification and reporting regulations).

**Description of the legislation**:
The Act requires:
"*...through examination of railway accidents and railway incidents to improve safety and prevent train accidents.*"

It applies to:
"*...railways, including tramways, metro, suburban and similar tracks bound transport covered by the Railways Act.*"

| The occurrence types that must be reported are: | To whom: | By whom: | By when: |
|---|---|---|---|
| See Taxonomy page | NIB and NSA | Railway Undertaking, Infrastructure Manager of Public (there is a standard form on the SJT website). | Significant accident and serious incident; immediately report to NIB via telephone, written within 72 hours to NIB and NSA<br>All other incidents with less serious potential, shall be reported to NSA within 8 days. |

**Uses**:
To provide data for CSI reporting, to monitor against CSTs and for the general development of railway safety. To populate a database.

| How to report? | Standard form: |
|---|---|
| Form on SJT website, with contact details. | Form on SJT website (with drop down menus) |

| | |
|---|---|
| | |

**Fields to be reported are:**

Sender Information:
Reported by:
Name and function:
Email:
Another actor involved:
Time and place of the event:
Event Location: (*)
Precise location: (*)
Event Scope:
Description and any consequence of the event
Event Type
Traffic type:
Damage caused by the incident:
Loss Potential event:
Involved rolling stock and equipment:
Preliminary evaluation of the cause:
Action:

**Database details**

| **Holder:** | **Confidential:** | **Link:** |
|---|---|---|
| NSA | Yes | N/A |

**Use:**
As above

| **Established:** | **Number of entries a year:** | **Software:** |
|---|---|---|
| 2000 | 25,000 | Synergi |

**Size of Database:**
About 180,000 recorded incidents. However the same incident may be reported both by IM and RU. There are approximately 145,000 individual incidents reported in Synergi (railway only).

**Further Information:**
Database includes trams as well as railways.

| | Poland | Regime | Purpose: To report against CSIs and to set the framework for occurrence reporting in Poland |
|---|---|---|---|
| | | Mandatory | |

**Legislation:**
Relevant national regulation on reporting occurrences are:

a) Rail Transport Act of 28 March 2003: http://isap.sejm.gov.pl/DetailsServlet?id=WDU20130001594

b) Regulation on serious accidents, accidents and incidents on railway lines of 30 April 2007: http://isap.sejm.gov.pl/DetailsServlet?id=WDU20070890593

c) Regulation on Common Safety Indicators of 20 July 2010: http://isap.sejm.gov.pl/DetailsServlet?id=WDU20101420952 (at present being amended)

**Description of the legislation**:

a) Rail Transport Act of 28 March 2003 (Art. 28g) which binds IMs and RUs to report occurrences to NIB immediately. Art. 17a. 4 and 5), which binds IMs and RUs to submit information on CSIs to NSA.

b) Regulation on serious accidents, accidents and incidents on railway lines of 30 April 2007 (§ 5.1) which binds IMs to report occurrences in writing to: NIB, NSA, regional Prosecution, regional Police Department, regional Fire Department, and regional Military Police Department.

c) Regulation on Common Safety Indicators of 20 July 2010, which gives IMs and RUs detailed information on reporting of CSIs.

| **The occurrence types that must be reported are:** | **To whom:** | **By whom:** | **By when**: |
|---|---|---|---|
| Defined in the Railway Transport Act as follows:<br>Accident - unintended sudden event or a series of such events with the participation of a railway vehicle, resulting in negative consequences for human health, property or the environment; accidents include, in particular:<br>a) collisions,<br>b) derailment<br>c) events at level crossings,<br>d) an event to persons caused by a railway vehicle in motion,<br>e) a railway vehicle fire; | NIB, NSA, regional Prosecution, regional Police Department, regional Fire Department, regional Military Police Department | Infrastructure manager and railway undertaking | Immediately to NIB, and in writing to other named parties |

<table>
<tr><td colspan="2">Serious accident - an accident caused by a collision, derailment of a train or other similar event:<br>a) at least one fatality or serious injury at least five or<br>b) causing significant damage to a railway vehicle, railway infrastructure or the environment, which can be immediately evaluated by a committee examining the case for at least 2 million, having an obvious impact on railway safety regulations and safety management;<br><br>Incident - any occurrence, other than an accident or serious accident, associated with the movement of trains and affecting safety;</td><td colspan="3">Uses:<br>To provide data that is required by the ERA.<br>To inform our supervision activities as an NSA.<br>It is collated into a database of accidents, incidents and near misses.<br>It is collated into a risk model.<br>NSA uses it to prepare a part of “An Assessment of Rail Market Operations and Rail Traffic Safety” presented annually to the Minister for Transport.</td></tr>
<tr><td colspan="2">How to report?:<br>Use of standard form</td><td colspan="3">Standard form:<br>Yes, Appendix 1 of Regulation on serious accidents, accidents and incidents on railway lines of 30 April 2007</td></tr>
<tr><td colspan="5">Fields to be reported are:<br>Reporting organisation; categorisation (serious accident, accident or incident); place; date and time; concise description of the event; possible fundamental cause of the event; other probable causes of the event; the course of the rescue operation; position and signature of the notifier.<br><br>Additional information may also be requested (as detailed in Appendix 2 onwards of the Regulation on serious accidents, accidents and incidents.</td></tr>
<tr><td colspan="5">Database details</td></tr>
<tr><td colspan="2">Holder:<br>Urząd Transportu Kolejowego (NSA)</td><td>Confidential:<br>Yes. Railway Accident Register can be accessed by creating an account with login and password. (But the reporting forms are not available.)</td><td colspan="2">Link:<br>In 2013 a new Railway Accident Register database was established on UTK intranet.</td></tr>
</table>

<table>
<tr><td colspan="3">Use:<br>To provide data that is required by the ERA.<br>To inform our supervision activities as an NSA.<br>It is collated into a database of accidents, incidents and near misses.<br>It is collated into a risk model.<br>NSA uses it to prepare a part of “An Assessment of Rail Market Operations and Rail Traffic Safety” presented annually to the Minister for Transport.</td></tr>
<tr><td>Established:<br>2011</td><td>Number of entries a year:<br>On average ca. 1070 entries for accidents, incidents and suicides on railway lines in the Register.</td><td>Software:<br>Initially in 2011 (in MS Excel file). Since 2013 there is a database in which data on occurrences is stored.</td></tr>
<tr><td colspan="3">Size of Database:<br>Since 2011 there are ca. 4500 entries for accidents, incidents and suicides on railway lines on the Register (both in Excel files and new database).</td></tr>
<tr><td colspan="3">Further Information:</td></tr>
</table>

<table>
<tr><td> </td><td>Portugal</td><td>Regime<br>Voluntary</td><td colspan="2">Purpose: Informing ERA of their CSIs. Internally it is used for monitoring against CSTs and to check the requirement/ implementation of additional preventative safety measures.</td></tr>
<tr><td colspan="5">Legislation:<br>N/A</td></tr>
<tr><td colspan="5">Description of the legislation:<br>There is guidance to systematically report occurrences in the network. There is an agreement between the NSA and the IM so that the latter sends the NSA daily reports of all occurrences in the network. IM also sends a daily summary of the most relevant occurrences related with traffic safety, as well as a monthly report with cumulative safety performance analysis from the beginning of the year.</td></tr>
<tr><td rowspan="2">The occurrence types that must be reported are: (COMMISSION DIRECTIVE 2009/149/EC):<br>Collisions of trains, including collisions with obstacles within the clearance gauge.<br>Derailment of trains.<br>Level crossing accidents, including accidents involving pedestrians.<br>Accidents to persons caused by rolling stock in motion, excluding suicides.<br>Fires in rolling stock.<br>Other accidents.<br>Broken rails.<br>Track defects.<br>Failure of side signals;<br>Signal passed at danger (SPAD)<br>Rupture wheels and axle boxes on rolling stock in service.</td><td>To whom:<br>NSA</td><td colspan="2">By whom:<br>Infrastructure Manager,<br>Railway undertaking,<br>Member of the public</td><td>By when:<br>Daily</td></tr>
<tr><td colspan="3">Uses:<br>To provide data that is required by the ERA.<br>To inform our supervision activities of the NSA.<br>It is collated into a database of accidents, incidents and near misses.<br>To provide information to the NIB</td></tr>
<tr><td>How to report?:<br>Notification via SMS and / or e-mail to the IM hierarchical chain with a summary of the event.</td><td colspan="4">Standard form:<br>Yes</td></tr>
</table>

<table>
<tr><td colspan="3">Fields to be reported are:<br><br>Location (Km, station, geo referenced…)<br>Type of occurrence: accident/ incident; rolling stock; infrastructure; personnel; computer systems; commercial; other (i.e. vandalism)<br>Date and time (to / from)<br>Train number<br>Locomotive/ traction unit<br>Responsible organisation<br>Timetable impact (minutes delayed)</td></tr>
<tr><td colspan="3">Database details</td></tr>
<tr><td>Holder:<br>Infrastructure manager</td><td>Confidential:<br>Daily circulation reports are made available to IM, RU, NSA and service providers</td><td>Link:<br>http://www.refer.pt/MenuPrincipal/REFER/GestaodaRede/SistemasdeInformacaoedeApoioaExploracao/SistemasDeApoioeRegistoDaCirculacao.aspx</td></tr>
<tr><td colspan="3">Use:<br>Informing ERA of their CSIs. Internally it is used for monitoring against CSTs and to check the requirement/ implementation of additional preventative safety measures.</td></tr>
<tr><td>Established:<br>N/A</td><td>Number of entries a year:<br>N/A</td><td>Software:<br>N/A</td></tr>
<tr><td colspan="3">Size of Database:<br>N/A</td></tr>
</table>

**Further Information:**

http://www.refer.pt/MenuPrincipal/REFER/GestaodaRede/SistemasdeInformacaoedeApoioaExploracao/SistemasDeApoioeRegistoDaCirculacao.aspx
(Portuguese acronyms presented within brackets)
eGOC: This is a management information system of occurrences that impact on circulation, which also produces the Daily Circulation Report (RDC – Relatório Diário de Circulação). Its features are:
• Integration of functions that help the agents of Local Command Posts (PCL – Postos de Comando Locais), Operational Command Centers (CCO – Centro de Comando Operacional) and Central Command Post (PCC – Posto de Comando Central) in the management of incidents / accidents, including:
o Overview of occurrences in the Network Map, particularly allowing for queries of local data and photographs of level crossings, Catenary schemes and other relevant elements of the infrastructure;
o Locate and view the occurrence in the infrastructure map and Google Maps;
o Obtain geo-referenced coordinates that allow, both internal and public bodies (medical emergency units, fire departments, police, and others), to easily locate the area the incident / accident through GPS;
o Integration of telephone numbers of above mentioned public authorities closest to the occurrence.
• Classification of occurrences, with identification of relevant accidents, other accidents and dangerous events, as defined in the Safety Directive and associated national legislation;
• Notification via SMS and / or e-mail to the IM hierarchical chain with a summary of the event;
• Automatic publication, via e-mail (after review by the CCP), of the RDC, made available to IM hierarchy, RU, the NSA and service providers.

<table>
<tr><td rowspan="2"> </td><td rowspan="2">Romania</td><td>Regime</td><td rowspan="2">Purpose: Informing ERA of their CSIs. Internally it is used for monitoring against CSTs and to check the requirement/ implementation of additional preventative safety measures.</td></tr>
<tr><td>Mandatory</td></tr>
<tr><td colspan="4">Legislation:<br>Regulations for the investigation of the railway accidents and incidents, for the development and improvement of Romanian railway and subway safety, approved by Government Decision no. 117/2010<br><br>http://www.afer.ro/legislatie_nationala/HG%20nr.%20117%20din%202010%20-%20include%20anexele.pdf</td></tr>
<tr><td colspan="4">Description of the legislation:<br>The regulation provides details of the requirements for investigation and reporting of railway and subway accidents, and also includes a form for data collection. The form is designed to populate the fields in the database.</td></tr>
<tr><td colspan="2" rowspan="2">The occurrence types that must be reported are:<br>Those requiring investigation by the NIB</td><td>To whom:<br>RUs/IMs report to both NSA and NIB. NSA reports to Ministry</td><td>By whom:<br>RUs/IMs report to both NSA and NIB. NSA reports to Ministry</td><td>By when:<br>Immediately verbally, with more detailed and formal follow-up within "the shortest possible time"</td></tr>
<tr><td colspan="3">Uses:<br>To inform our supervision activities as an NSA.<br>It is collated into a database of accidents, incidents and near misses.<br>To provide information to the NIB.</td></tr>
<tr><td colspan="2">How to report?:<br>Immediately verbally, with more detailed and formal follow-up within "the shortest possible time"</td><td colspan="3">Standard form:<br>Yes</td></tr>
<tr><td colspan="5">Fields to be reported are:<br>Monthly and annual return for CSI data</td></tr>
<tr><td colspan="5">Database details</td></tr>
<tr><td colspan="2">Holder: N/A</td><td>Confidential:<br>N/A</td><td colspan="2">Link: N/A</td></tr>
</table>

| | | |
|---|---|---|
| **Use:** Informing ERA of their CSIs. Internally it is used for monitoring against CSTs and to check the requirement/ implementation of additional preventative safety measures. | | |
| **Established:**<br>N/A | **Number of entries a year:**<br>N/A | **Software:**<br>N/A |
| **Size of Database:**<br>N/A | | |
| **Further Information:** | | |

<table>
<tr><td rowspan="2"> </td><td rowspan="2">Slovakia</td><td>Regime</td><td rowspan="2">Purpose: Informing ERA of their CSIs. Internally it is used for monitoring against CSTs and to check the requirement/ implementation of additional preventative safety measures.</td></tr>
<tr><td>Mandatory</td></tr>
<tr><td colspan="4">Legislation:<br>§ 93 of Predpis č. 513/2009 Z. z. imposes reporting obligations for Infrastructure Managers and Railway Undertaking<br>http://www.zakonypreludi.sk/zz/2009-513<br>§ 15 Predpis č. 514/2009 Z. z. imposes the requirement for the provision of information for safety assessment.<br>http://www.zakonypreludi.sk/zz/2009-514<br>Notice of notification of serious accidents and incidents, which occurred on railway tracks.<br>http://www.telecom.gov.sk/index/index.php?ids=71981, prilohu 12 zakona c. 513/2009, ktora sa spomina vtexte: http://www.zakonypreludi.sk/zz/2009-513<br>Also: PRÍKAZ č. 2/2011 1. podpredsedu vlády a ministra dopravy, výstavby a regionálneho rozvoja Slovenskej republiky zo dňa 3. novembra 2011 (command. 2/2011 1st Deputy Prime Minister and Minister of Transport, Construction and Regional Development<br>Slovak Republic dated November 3, 2011)</td></tr>
<tr><td colspan="4">Description of the legislation:<br>Lays out the requirements for reporting of serious accidents and incidents that occurred on railroad tracks. This is for immediate reporting, and then for a more detailed set of information within 7 days.<br>Contact details for immediate reporting, and e-mail addresses for reporting are provided.</td></tr>
<tr><td rowspan="2">The occurrence types that must be reported are:<br>(1) Accidents are serious accidents, minor accidents and incidents involving a moving railway vehicle with the consequences of paragraph 2.<br>(2) a) a serious accident shall mean any collision or derailment of trains, which result at least one person killed, or at least five seriously injured, or extensive damage to rolling stock, infrastructure, environmental environment or property of third parties, as well as other similar accident with an obvious implications for the safety of the existing rail system or the management Security<br>1. The collision of trains<br>2. Derailment<br>3. Train Accident at level crossing path with the road,<br>4 Injuries caused by a moving railway vehicle<br>5. Fire<br>6. Other accidents</td><td>To whom:<br>National Safety Authority, Ministry</td><td>By whom:<br>Infrastructure Manager, Railway Undertaking</td><td>By when:<br>Depends on event.<br>Immediately if serious</td></tr>
<tr><td colspan="3">Uses:<br>To provide data that is required by the ERA.<br>To inform our supervision activities of the NSA.<br>To provide information to the NIB</td></tr>
</table>

| | |
|---|---|
| **How to report?**<br>By e-mail and telephone for immediate reporting, and more formal reports also by e-mail | **Standard form**:<br>No |

**Fields to be reported are:**

The organization shall ensure that the ministry reported the following events:

a) natural disaster, catastrophe, calamity, emergency service, emergency transport means of public transport, damage to property and infrastructure and other unplanned fact that results are:

- Interruption of rail transport in the expected duration of more than 6 hours
- Severe, life-threatening injury at least five people and killing party event, except in cases of death from suicide
- Threat of kidnapping or abduction of a vehicle of public transport, robbery, terrorist threat or carried out a terrorist attack or threat of attack on the implementation of electronic communications networks, if they have a direct impact on the operation of the organization under the Ministry,
- Accident of the vehicle transporting dangerous goods according to international agreements (e.g. ADR, RID, ADN, Annex 18)

Fields included are (for initial report, which is immediate):

- the date and time of the event,
- the place of the event or the location where the event took place,
- type of event
- the number of killed and seriously injured,
- the probable cause of the event,
- the direct consequences of the event and the estimated time of their removal,
- own measures to eliminate the consequences of the event,
- requirements imposed on aid from other components, or organizations
- the deployment of forces and means of the latter and rescue services (fire and rescue, emergency medical services, police, municipal police, armed forces, civil protection, etc.),

who makes the report (name, position, phone / cell phone, date and time of notification).

**Database details**

| | | |
|---|---|---|
| **Holder:**<br>Zeleznice Slovenskej (state owned Infrastructure Manager) | **Confidential:**<br>N/A | **Link:**<br>N/A |

**Use:**

Informing ERA of their CSIs. Internally it is used for monitoring against CSTs and to check the requirement/ implementation of additional preventative safety measures.

| | | |
|---|---|---|
| **Established:**<br>Need to ask IM | **Number of entries a year:**<br>Need to ask IM | **Software:**<br>Need to ask IM |

**Size of Database:**

Need *to a*sk IM

**Further Information:**

<table>
<tr><td rowspan="2"> </td><td rowspan="2">Republic of Slovenia</td><td>Regime</td><td rowspan="2">Purpose: Informing ERA of their CSIs. Internally it is used for monitoring against CSTs and to check the requirement/ implementation of additional preventative safety measures.</td></tr>
<tr><td>Mandatory</td></tr>
<tr><td colspan="4">Legislation:<br>The Railway Safety Act is linked here:<br>http://www.uradni-list.si/1/content?id=113772#!/Zakon-o-varnosti-v-zelezniskem-prometu-(uradno-precisceno-besedilo)-(ZVZelP-UPB3)</td></tr>
<tr><td colspan="4">Description of the legislation:<br>Article 24 (3) requires that "Every year until 30 June operator and operators to submit to the safety authority an annual safety report for the previous calendar year. The safety report shall contain:<br><br>a) information on how to comply with the SVC organizations, and the results of safety plans for their management;<br><br>b) development of national safety indicators listed in Annex I of Directive 2004/49 / EC, it is important for an organization that prepares the report;<br><br>c) the results of internal safety audits;"<br><br>d) observations on deficiencies and weaknesses in the implementation and management of rail infrastructure, which would be relevant for the safety authority.<br><br>Further, Article 35 provide the requirements for immediate notification of "accidents and serious accidents in which people were injured or suffered serious damage and accidents and serious incidents that have criminal offense."</td></tr>
<tr><td>The occurrence types that must be reported are:<br>No standard form is used. The following is mentioned here http://www.azp.si/en/azp-administrative-acts-and-forms/forms<br><br>REPORT ON PUBLIC SAFETY INFRASTRUCTURE THE REPUBLIC OF SLOVENIA FOR THE YEAR 2012 requires:</td><td>To whom:<br>Public Agency of the Republic of Slovenia for Railway Transport (NSA)</td><td>By whom:<br>Infrastructure Manager and Railway Undertaking</td><td>By when:<br>Within 24 hours (via email) and an annual report is sent to the NSA</td></tr>
</table>

| | |
|---|---|
| *Date of incident Place of incident Description of the incident*<br>*H. DETAILED ANALYSIS OF DATA FOR REPORTING:*<br>• *The number of accidents;*<br>• *The number of deaths;*<br>• *The number of injured persons;*<br>• *The number of events which could lead to accidents (breaking the track deformation of the track, wrong signals ...);*<br>• *Costs of all accidents;*<br>• *Technical security infrastructure;*<br>• *Results of safety reports and recommendations;*<br>• *Other information that may have an impact on rail safety*." | **Uses**:<br>REPORT ON PUBLIC SAFETY INFRASTRUCTURE THE REPUBLIC OF SLOVENIA FOR THE YEAR 2012 also requires:<br>"*The infrastructure manager / operator in the shall give the safety measures*<br>*adopted as the result of a railway accident, and concrete examples of rail accidents, which were the cause of the preventive measures taken.*<br><br>*Where accidents have launched a safety measure, the preventive measures taken SUGGESTIONS FOR IMPROVING THE LEVEL THE RAILWAY SAFETY Proposed amendments to national safety regulations descriptions of change initiatives to maintain respectively improve railway safety initiatives to amend the common safety methods*." |

| | |
|---|---|
| **How to report?**<br>Via email for immediate notification. | **Standard form**:<br>Standard form is not used |

**Fields to be reported are:**
There is no standard form, however the authorities analyse data as in the taxonomy data provided in the Taxonomy worksheet

**Database details**

| | | |
|---|---|---|
| **Holder:**<br>Public Agency of the Republic of Slovenia for Railway Transport (NSA) | **Confidential:**<br>Data for CSIs published and available via ERA E-Rail website | **Link:** A link to the data template is provided here: http://www.azp.si/sl/upravni-akti-ap-in-obrazci/obrazci<br>At the time of writing is was the second bullet. |

**Use:**
Based on the survey responses, the data is used for informing ERA of their CSIs. Internally it is used for monitoring against CSTs and also the stated uses above (to influence and check the requirement/ implementation of additional preventative safety measures).

| | | |
|---|---|---|
| **Established:**<br>2006 | **Number of entries a year:**<br>Highest = 70, lowest = 11 | **Software:**<br>Microsoft Excel |

**Size of Database:**
Circa 274 entries to end of 2013

**Further Information:**
Effectively this is a CSI capture system

| | | | |
|---|---|---|---|
| | **Spain** | **Regime**<br>Mandatory | **Purpose**:<br>Informing ERA of their CSIs. Internally it is used for monitoring against CSTs and to check the requirement/ implementation of additional preventative safety measures. |

**Legislation:**
Real Decreto 623/2014, de 18 de julio, por el que se regula la investigación de los accidentes e incidentes ferroviarios y la Comisión de Investigación de Accidentes Ferroviarios
http://www.boe.es/diario_boe/txt.php?id=BOE-A-2014-7651

Royal Decree 623/2014, of 18 July, on the investigation of railway accidents and incidents and the Commission of Railway Accidents Investigation is regulated

**Description of the legislation**:
Divided into three Chapters:
Chapter I General provisions on the subject, scope, definitions and obligation to investigate railway accidents and incidents mentioned by the Commission of Inquiry are included.
In Chapter II, the internal structure of the Commission for the appointment of its members as well as their composition and functions defined.
Chapter III the investigation procedure which highlights, pursuant to the provisions of Article 22.3 of the Railway Safety Directive, among other changes, to grant a period of fifteen days to make comments on the information collected to the events and investigations carried out in the draft technical report, with due caution with regard to the protection of personal data and the protection of the objectives of the safety investigation.

Article 14.1 states
**In Spanish**: Producido un accidente o incidente en la Red Ferroviaria de Interés General, el administrador de la infraestructura, las empresas ferroviarias que se vieren implicadas y, en su caso, la autoridad responsable de la seguridad informarán del mismo a la Comisión, lo antes posible.

**In English:** An accident or incident in the General Interest Railway Network, the infrastructure manager, railway companies involved and, where appropriate, responsible for the safety authority shall inform the Commission thereof as soon as possible.

| **The occurrence types that must be reported are:** | **To whom:** | **By whom:** | **By when**: |
|---|---|---|---|
| **623/2014 Article 3 defines:**<br>**a) Accident:** Any sudden event unwanted or unintended or a chain of such events which have harmful consequences. Accidents are divided into the following categories: collisions, derailments, level crossing accidents, damage to persons caused by rolling stock in motion, fires and others. | NIB (CIAF) for events it will investigate, the infrastructure manager (ADIF) and the NSA. | Infrastructure Manager, Railway Undertaking | NIB (CIAF) receives immediate communication for certain events. ADIF and the NSA receive monthly reports. |

| | |
|---|---|
| **b) Serious accident:** Any collision or derailment of trains, resulting, in at least one fatality or five or more serious injuries or extensive damage to rolling stock, the infrastructure or the environment, and any other similar accident with an obvious impact on railway safety regulation or security management; by extensive damage means damage that can immediately be assessed cost the investigative body in at least a total of two million euros.<br><br>**c) Incident:** Any occurrence, other than an accident or serious accident, associated with the use and operation of trains or rolling stock and affecting the safety of traffic. | **Uses**:<br>To provide data that is required by the ERA.<br>To inform supervision activities.<br>To provide information to the NIB. |

| | |
|---|---|
| **How to report?**:<br>Via phone (assumed) | **Standard form**:<br>No |

**Fields to be reported are:**
The responder stated: "*There is a template but as a guide Schedule V is used in the Safety Directive*."

See also taxonomy (of what is required to be included in a report)

**Database details**

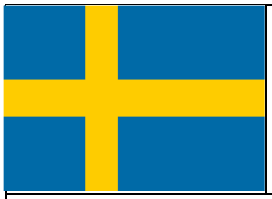
| | | |
|---|---|---|
| **Holder:**<br>NIB (CIAF) has a database but this is an internal tool in which all relevant data are stored associated with an event that CIAF has decided to investigate. | **Confidential:**<br>N/A | **Link:**<br>N/A |

**Use:**
As above

| | | |
|---|---|---|
| **Established:**<br>N/A | **Number of entries a year:**<br>N/A | **Software:**<br>N/A |

**Size of Database:**
N/A

**Further Information:**

<table>
<tr><td>  </td><td>Sweden</td><td>Regime<br>Mandatory</td><td>Purpose: Informing ERA of their CSIs. Internally it is used for monitoring against CSTs and to check the requirement/ implementation of additional preventative safety measures.</td></tr>
<tr><td colspan="4">Legislation:<br>Transport Agency regulations about accident and safety reporting for rail; decided on 22 September 2011<br>http://www.transportstyrelsen.se/TSFS/TSFS_2011_86.pdf</td></tr>
<tr><td colspan="4">Description of the legislation:<br>These regulations contain provisions concerning safety report of accidents, incidents and deficiencies. The provisions do not apply to railway undertakings and infrastructure managers which only operates: Local and regional networks which are independent and intended solely injury or museum traffic; networks which are not managed by the state and used only by IM for shipments of own goods.</td></tr>
<tr><td colspan="2" rowspan="2">The occurrence types that must be reported are:<br>Fire.<br>Collision.<br>Unsolicited and non-intentional sudden event or sequence of events which has harmful consequences.<br>Accident where a person dies (including suicide) or is injured, but not consisting of fire, collision, level crossing accident, collision, derailment or release of goods.<br>Level crossing accident.<br>Accident consisting of collision between rail vehicles and other objects, but not at a level crossing.<br>Incidents (event that under slightly different conditions might have led to an accident.<br>derailment: accident where a wheel of a rail vehicle leaves the rail.<br>Loss of containment of dangerous goods</td><td>To whom:<br>The Swedish Transport Agency (NSA)</td><td>By whom:<br>Infrastructure Manager,<br>Railway undertaking,<br>Member of the public,<br>SOS Alarm,<br>Police</td><td>By when:<br>Immediately for serious accidents (see taxonomy for definitions).<br>Annually for other events (in safety report)</td></tr>
<tr><td colspan="3">Uses:<br>To provide data that is required by the ERA.<br>To inform supervision activities.<br>To provide information to the NIB.<br>It is collated into a database of accidents, incidents and near misses</td></tr>
<tr><td colspan="2">How to report?:<br>Via telephone</td><td colspan="2">Standard form:<br>No</td></tr>
</table>

| | | |
|---|---|---|
| **Fields to be reported are:**<br>Although a standard form is not in use, certain reporting details are specified in http://www.transportstyrelsen.se/TSFS/TSFS_2011_86.pdf | | |
| **Database details** | | |
| **Holder:**<br>The Swedish Transport Agency (NSA) | **Confidential:**<br>Internal only | **Link:**<br>N/A |
| **Use:**<br>Informing ERA of their CSIs. Internally it is used for monitoring against CSTs and to check the requirement/ implementation of additional preventative safety measures. | | |
| **Established:**<br>N/A | **Number of entries a year:**<br>N/A | **Software:**<br>N/A |
| **Size of Database:**<br>N/A | | |
| **Further Information:** | | |

<table>
<tr><td rowspan="2"> </td><td rowspan="2">Switzerland</td><td>Regime</td><td rowspan="2">Purpose: To provide data for CSI reporting, to monitor against CSTs and for the general development of railway safety</td></tr>
<tr><td>Mandatory</td></tr>
<tr><td colspan="4">Legislation:<br>Regulation on the reporting and investigation accidents and serious incidents in the operation public transport<br>(Accident Investigation Regulation, VUU) of 28 June 2000 (as of November 1, 2011)<br><br>http://www.admin.ch/opc/de/classified-compilation/20001124/index.html</td></tr>
<tr><td colspan="4">Description of the legislation:<br>Provides definitions of reportable events, the reporting requirements (including but not limited to railways) and timescales and different reporting levels.</td></tr>
<tr><td rowspan="2">The occurrence types that must be reported are:<br><br>Accident: Event with death or serious injury or significant property damage (> CHF 100,000).<br>Serious incident (e.g. threat) that would have led to an accident if safety measures had not been in place.<br>Events with minor injuries injuries.<br>Suicides or suicide attempts.<br>Major technical defect (e.g. engine damage, axle defect, broken rails etc.)<br>Exceptional event (technical failure<br>security-related areas or deficient or<br>faulty security measures or for safety<br>due to human error).<br>Hazardous event events under Section 1.8.5 RID.<br>Sabotage, including bomb threats.<br>Fires of vehicles and larger explosions of safety-related systems.</td><td>To whom:<br>Federal Office of Transport (BAV)</td><td>By whom:<br>Infrastructure managers and railway undertakings</td><td>By when:<br>To the NSA within 30 days of the event</td></tr>
<tr><td colspan="3">Uses:<br>To provide data that is required by the ERA.<br>To inform supervision activities of the NSA.<br>It is collated into a database of accidents, incidents and near misses<br>It is collated into a risk model that seeks to model the level of risk on the railway.</td></tr>
</table>

<table>
<tr><td>Disturbances (e.g. natural disasters, failure of power supply or security systems) causing operational interruption > 6 hours.<br>Collisions of trains or shunting vehicles with:<br>- Other railway vehicles<br>- Road vehicles<br>- Equipment of the infrastructure manager<br>- Obstacles (such as buffer) > = CHF 25,000.<br>- Animals > = CHF 25,000.<br>Train derailments or shunting cases in which at least one wheel of a train or a shunting leaves the rails.<br>Runaway of rail vehicles.<br>SPADS and other violations.</td><td colspan="3"></td></tr>
<tr><td>How to report?:<br>Standard form with headings and guidance</td><td colspan="3">Standard form:<br>Yes</td></tr>
<tr><td colspan="4">Fields to be reported are:<br>See above and taxonomy</td></tr>
<tr><td colspan="4">Database details</td></tr>
<tr><td colspan="2">Holder:<br>Bundesamt für Verkehr BAV</td><td>Confidential:<br>Can be accessed via login</td><td>Link:<br>https://www.nedb.admin.ch/logout?request_locale=de</td></tr>
<tr><td colspan="4">Use:<br>As above</td></tr>
<tr><td>Established:<br>2008</td><td>Number of entries a year:<br>3000</td><td colspan="2">Software:<br>Oracle with serverscript, pap/html</td></tr>
<tr><td colspan="4">Size of Database:<br>21000</td></tr>
<tr><td colspan="4">Further Information:<br>Online since 2010</td></tr>
</table>

| United Kingdom | Regime | Purpose: Part of a national system of occupational safety reporting, extended into the reporting of incidents on the railway |
|---|---|---|
| | Mandatory | |

**Legislation:**
Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 mandates the requirements for reporting of incidents, including on the railway.

http://www.legislation.gov.uk/uksi/2013/1471/contents/made

Additional reporting of vehicle defects can be made through the National Incident Reporting (NIR) system: http://www.rgsonline.co.uk/Railway_Group_Standards/Rolling%20Stock/Railway%20Group%20Standards/GERT8250%20Iss%202.pdf

**Description of the legislation**:
**RIDDOR** applies to all industries, with specific provisions for railways. RIDDOR applies to railways, tramways and any other system using guided transport. Certain exclusions apply, such as anything below a gauge of 350 millimetres (unless it crosses a carriageway), guided bus systems etc. (A full list is provided within the guidance document).
http://orr.gov.uk/__data/assets/pdf_file/0010/2332/riddor-guidance.pdf

**NIR** is mandatory for "high risk defects". These are anything that has caused or had the potential to cause:
a) The death or injury of any person.
b) An accident to the rail vehicle itself.
c) An accident to any other rail vehicle, equipment or plant & machinery.
d) Damage likely to endanger the safety of:
i) Any person or animal
ii) Trains
iii) The infrastructure
iv) The environment.
It includes the discovery of a deficiency in authorised documentation or systems that could, if implemented, cause a high risk defect as defined above.

| The occurrence types that must be reported are: | To whom: | By whom: | By when: |
|---|---|---|---|
| **Under RIDDOR:**<br>Specified accidents and incidents. All fatalities and major injuries and those involving absence from work of over 7 days.<br><br>**NIR:**<br>Specified in terms of consequence, not events - see above. | The NSA (Office or Rail Regulation) receives RIDDOR reports. The Rail Safety and Standards Board collect occurrence reports through the National Incident Reporting scheme (NIR) and shares them with the railway industry, including the NSA | Infrastructure Manager, Railway undertaking | A RIDDOR report must be submitted within 10 days, or 15 if the incident relates to a person being incapacitated for more than 7 consecutive days. NIR reports must be made within 24 hours. |

| | |
|---|---|
| | **Uses**:<br>To provide data that is required by the ERA.<br>To inform supervision activities as an NSA.<br>It is collated into a database of accidents, incidents and near misses.<br>It is collated into a risk model that seeks to model the level of risk. |
| **How to report?**:<br>On-line (both RIDDOR and NIR) | **Standard form**:<br>Yes, for RIDDOR |
| **Fields to be reported are:**<br>The failure of a tunnel, bridge, viaduct, culvert, station or other structure or any part of it including the fixed electrical equipment of an electrified relevant transport system;<br>Any failure in the signalling system which could cause a significant risk to the safe passage of trains other than a failure of a traffic light controlling the movement of vehicles on a road;<br>A slip of a cutting or of an embankment;<br>Flooding of the permanent way;<br>The striking of a bridge by a vessel or by a road vehicle or its load;<br>The failure of any other portion of the permanent way or works<br>Any train, travelling on a running line or entering a running line from a siding, passing a signal displaying a stop aspect without authority, unless the stop aspect was not displayed in sufficient time for the driver to stop safely at the signal<br>If there was a fire (not on the train) where did it occur?<br>If there was an obstruction on the line, what type of obstruction was there?<br>If there was a Wrong Side Failure, what type of failure occurred?<br><br>NIR specified in terms of consequence, not event. | |

| **Database details** | | |
|---|---|---|
| **Holder:**<br>The Rail Safety and Standards Board maintain the Safety Management Information System for both RIDDOR and NIR | **Confidential:**<br>Yes.<br>However organisations can sign up and access their own data and request other data (which may have confidential elements removed) | **Link:**<br>N/A |

| | | |
|---|---|---|
| **Use:**<br>To provide data that is required by the ERA.<br>To inform NSA supervision activities.<br>It is collated into a database of accidents, incidents and near misses.<br>It is collated into a risk model that seeks to model the level of risk on the railway. | | |
| **Established:**<br>SMIS | **Number of entries a year:**<br>N/A | **Software:**<br>N/A |
| **Size of Database:**<br>N/A | | |
| **Further Information:**<br>Information on SMIS is available on RSSB web-site.<br>http://www.rssb.co.uk/ | | |

## About DNV GL

Driven by our purpose of safeguarding life, property and the environment, DNV GL enables organizations to advance the safety and sustainability of their business. We provide classification and technical assurance along with software and independent expert advisory services to the maritime, oil and gas, and energy industries. We also provide certification services to customers across a wide range of industries. Operating in more than 100 countries, our 16,000 professionals are dedicated to helping our customers make the world safer, smarter and greener.